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Air Pollution Translations:

a bibliography with abstracts –

Volume 2

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Office of Technical Information and Publications
Air Pollution Technical Information Center

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Environmental Health Service
National Air Pollution Control Administration
Raleigh, North Carolina
April 1970

The AP series of reports is issued by the National Air Pollution Control Administration to report the results of scientific and engineering studies, and information of general interest in the field of air pollution. Information reported in this series includes coverage of NAPCA intramural activities and of cooperative studies conducted in conjunction with state and local agencies, research institutes, and industrial organizations. [redacted]

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CONTENTS

INTRODUCTION 1

AIR POLLUTION TRANSLATIONS

- A General 3
- B Emission Sources 5
- C Atmospheric Interaction 15
- D Measurement Methods 17
- E Control Methods 27
- F Effects - Human Health 37
- G Effects - Plants and Livestock 69
- H Effects - Materials 77
- J Air Quality Measurements 79
- K Legal and Administrative Aspects 87
- L Standards and Criteria 93
- M Basic Science and Technology 95

AUTHOR INDEX 101

LANGUAGE INDEX 107

SUBJECT INDEX 109

AIR POLLUTION TRANSLATIONS: A BIBLIOGRAPHY WITH ABSTRACTS — VOLUME 2

INTRODUCTION

This volume of "Air Pollution Translations: A Bibliography with Abstracts" is the second in a continuing series of compilations presenting abstracts and indexes of translations of technical air pollution literature. It is published as an integral part of the Air Pollution Technical Information Center's (APTIC) assigned task of gathering, processing, and disseminating the world's technical literature on air pollution. At least 95 percent of the entries have been translated for APTIC's Translations Section by outside contractors. About 2 percent have been obtained by screening published translation documents and 3 percent by screening the output of other translation services within and without the Federal Government.

The 444 entries are grouped into 12 subject categories. Within the categories the entries are arranged in ascending but not necessarily consecutive numerical order using the APTIC accession number preceded by a letter which denotes its category. The letter designates the section of the bibliography in which the abstract can be found. As an example, the number A-6462 refers to Section A, General, and to accession 6462 within it. The highest accession number covered is 11667.

The language distribution is: Czech - 20, Danish - 3, Dutch - 9, French - 46, German - 217, Hungarian - 1, Italian - 37, Japanese - 38, Norwegian - 1, Polish - 15, Russian - 38, Serbo-Croatian - 1, Slovak - 6, Spanish - 1, and Swedish - 11.

An Author Index, Language Index, and Subject Index are included in which the entries are referenced using the letter-numeral accession number. The Author Index lists the first author and, separately, any co-authors. The Subject Index lists descriptors taken from the APTIC microthesaurus, and other terms that most nearly indicate the essence of the document. Cross-references have been made when the descriptor consists of more than one significant word, when the most significant word does not appear first, and to group generically similar concepts. For example, "Manganese compounds" will also be listed under "Chemical compounds."

NAPCA personnel may obtain copies of the full translations abstracted herein by directing requests to the Air Pollution Technical Information Center.

Non-NAPCA readers may, upon request to the Air Pollution Technical Information Center, borrow the full translations abstracted herein for a period of 1 week.

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A-3205

Epstein, Danielle
DETECTION AND PREVENTION OF AIR POLLUTION IN THE U.S.S.R. [Détection et prévention de la pollution atmosphérique en U.R.S.S.] Translated from French. Pollution Atmospherique, No. 31, p. 273-283, July-Sept. 1966.

The problems of the toxic amounts of air pollutants (CO, SO_2, H_2SO_4, NO, and 3, 4-benzopyrene) are described and the criteria for standardization in Russia are given. The methods for detecting toxic proportions of these pollutants are given in detail, the techniques used for animal experimentation, and studies of the tests applicable to mankind and the techniques of applying them are described in particular. The paper mentions that since chronaxie was judged insufficiently sensitive, the Soviet authors resorted to electroencephalographic methods which reveal an electrocortical reflex for small amounts of polluting agents. These tests involving instantaneous maximum admissible concentration are supplemented by statistically analysed experiments on animals. (Author's summary)

A-6462

Kislyakov, L. D., V. A. Bocharov, and G. I. Arzhannikov
PYRITE FLOTATION WITH THE USE OF FLUE GASES. Translated from Russian. Soviet Journal of Non-Ferrous Metals, 4(4):22-26, April 1963. 5 refs.

Methods of controlling the pH value in pyrite flotation are discussed. With a pH value close to 7 the process proceeds actively. The use of CO_2 in alkalinity reduction was demonstrated in laboratory research, the procedure being due to the following type of reaction: $Ca(OH)_2 + CO_2 = CaCO_3 + H_2O$. It was found that when the pulp was agitated with flue gases a rapid reduction took place; after 3 to 5 minutes, there was a reduction in alkalinity from 500 to 700 gm of free CaO per cubic meter of pulp until phenolphthalein tests showed no color. The use of the flue gases makes it possible to obtain high technological indices without using the preliminary thickening operation for pyrite-containing products or pyrite flotation modifying agents. Application of this technology in the pyrite flotation of Degtyarsk copper ores at the Sredneural'sk plant made it possible to achieve the following: (1) increase production of high-quality flotation pyrite concentrate by 1.5 to 2 times; (2) to raise the grade of general pyrite concentrate from 3rd to 2nd grade; (3) to increase sulfur extraction by 5 to 7 percent on reflotation; (4) to exclude thickener and reduce water consumption by 50 percent. Capital expenditures for mounting the installation were estimated at a total of 200,000 rubles and operating costs were estimated at 247,000 rubles. Annual savings from the technology are over 760,000 rubles. When H_2SO_4 is used and its mean consumption is 5 kg/t ore, other conditions being equal, the operating costs will increase by 145,000 rubles and the economic efficiency will be correspondingly reduced.

A-10776

Lassalas, A. F.
AIR HYGIENE: PURIFICATION, DISINFECTION. [Hygiene de l'air: Assainissement - Desinfection.] Translated from French. Tech. Hosp. Medico-Sociales Sanit. (Paris), 3(26):21-22, Nov. 1947. 1 ref.

The possible use of ozone for sterilization of areas such as maternity clinics and contagious disease wards is discussed. Ozonization also occurs naturally. About 3.5 mg of ozone per 100 m^3 of air has been found at Chamonix. Ozone generators are discussed which use atmospheric oxygen as the source of the ozone. Ozonization is ideal for asepsis because the operation of the systems can be controlled electrically and equipment needs cleaning only once or twice every two years. Ozone may also offer a convenient solution for everyday sterilization problems.

A-10777

Lassalas, A. F.
CONTRIBUTION OF OZONE TO AIR ASEPSIS. [Contribution de l'ozone a l'asepsie de l'air.] Translated from French. Tech. Hosp. Medico-Sociales Sanit. (Paris), 2(18):16-17, March 1947. 1 ref.

The use of ozone for sterilization of habited rooms is discussed since ozone is known to destroy 80 percent of the bacteria present. Ozone, an allotropic form of oxygen, can be produced by permanent installations which are operated automatically or semiautomatically. Ozone has been used as a tonic to stimulate the digestion of bedridden persons, and also as a deodorizing agent, such as in the Armentieres Asylum for the Insane, in dissecting rooms, and in hospitals. It is known to induce an increase in oxyhemoglobin level in anemic patients. Ozone generators are described with emphasis upon the suitable use of several types of generators according to their design and performance.

A-10812

Miczek, Gerhard and Kvetoslav Spurny
ANALYTICAL MICROCYLONE AS A PRELIMINARY SEPARATOR FOR MEMBRANE FILTERS. [Analytischer Mikrozyklon als Vorabscheider für Membranfilter.] Translated from German. STAUB (Düsseldorf), 24(8):332-335, Aug. 1964. 7 refs.

An apparatus is described for the separation of a dust fraction >3 μ and <5 μ. The apparatus is a combination of a microcyclone and a membrane filter. A test aerosol $CaCl_2$ solution was used to determine the efficiency and flow characteristics of this microcylone. A flow rate of 10 l/min. is recommended for this apparatus in order to separate particles of <3 μ.

A-10813

Bricard, J., M. Deloncle, J. Pradel, and G. Madelaine
PHOTOELECTRIC DETERMINATION OF GRANULAR SIZE DISTRIBUTION IN AN AEROSOL. Translated from German. STAUB (Düsseldorft). 24(8):287-290, Aug. 1964. 3 refs.

The principle behind the evaluation of the particle size distribution of an aerosol is explained; in the explained method, the light scattered by each particle is measured. Examples of the applicability of this method are presented: testing the efficiency of filters, and investigation of the composition of natural clouds or Parisian mist.

A-10878

Flury, Ferdinand and Franz Zernik
NOXIOUS GASES—SMOKE, FOG, FUMES AND DUST. [Schädliche Gase—Dämpfe, Nebel, Rauch- und Staubarten.] Translated from German. Folia Med. Cracoviensia (Plordir), Vol. 3, p. 194-221; 488-491; 513-515; 530-531; 542-543; 555; 563-565, 1931. 4 refs. (Krakow)

A comprehensive state-of-the-art review on carbon monoxide, carbon dioxide and related gases - reflecting pertinent knowledge as of 1931 - is presented. Most of the article deals with carbon monoxide - its occurrence, properties, toxicity, method of action, symptomatology, detection, chronic effects, and treatment of intoxication in humans. Carbon dioxide is briefly discussed under similar headings. Finally there follow brief - and somewhat more generalized - discussions of the toxic effects of gases released at explosions (including dust explosions); flue and fuel gases which arise when chemicals, e. g. petroleum products, are heated; refrigeration gases; liquified and compressed gases; war gases; air as a gas in submarines; aerosols, dusts and powders; and pharmaceutical inhalants. Legal restrictions on pesticides, etc., are briefly noted.

A-11462

Bousser, Jaques
FROM SATURNISM......TO THALASSEMIA. [Du saturnisme......a la thalassemie.] Cahiers du College Medicine Hopitaux de Paris, Vol. 6, p. 253-254, March 1965.

The observations of a patient who had worked in a plant for 6 months handling toxic products of the "White Spirit" type are given. He showed signs of chronic lead poisoning; however he did not touch any toxic products that might have contained lead. After extensive examination, it was found that the patient had minimal thalassemia, a hereditory blood anomaly which was not of great consequence to his health and which would not prevent him from working in any way.

B-0895

Lur'e, V. L.
STUDY OF THE HARMFUL INDUSTRIAL EXHAUSTS IN THE ATMOSPHERE IN THE SYNTHETIC RUBBER PLANTS IN VORONEZH AND YEFREMOV. [Obsledovanie Vrednykh Proizvodstvennykh Vybrosov v Atmosferu na Voronezhskom i Efremovskom Zavodakh SK.] Translated from Russian. Kauchuk i Rezina, No. 3, p. 36-37, 1966.

Waste emission both in the factory area and in the hygienic control zone around it (300-500 m from the factory) were studied both qualitatively and quantitatively. While pollution did not exceed the established limits in the factory areas, it did in the control zone surrounding the factories. Contaminants were butadiene, isobutylene, styrene, benzene and ethanol vapors. Most of the pollution was caused by styrene-butadiene rubber processing in the belt casting machine. Large amounts of hydrocarbons were given off by shops producing isoprene and latex. Pollution of the surrounding air also came from exhaust ventilation of the factories and open pits of chemical waste. This resulted in a fall of 1200 metric tons in Voronezh and 700 tons in Efremov per year. Measures for the control of exhaust ventilation from the factories are urged.

B-0905

Buchta, O.
HYGIENIC CONDITIONS ON MOLDING POLYESTER GLASS REINFORCED PLASTICS. [Hygienicke pomery pri lisovani poluesterovych skelnych laminatu.] Translated from Czech. Plasticke Hmoty Kaucuk (Prague), 3(6):177-182, 1966.

Hygienic problems associated with the manufacture of polyester glass reinforced plastics are discussed. Results are given for the polarographic measurement of styrene vapor concentration in the atmosphere of the general pressing room and the hand pressing room.

B-2148

NO_2 GAS GENERATED IN THE COMBUSTION CHAMBER OF COAL BURNING BOILERS. Translated from Japanese. Clean Air and Heat Management, 15(4):5-9, April 1966.

Emphasis is placed on the importance of NO_2 in air pollution and urges that as much effort be exerted in abating pollution due to this gas as to SO_2 or SO_3 which are currently under extensive study. The paper describes the experimental study done by the U.S. Bureau of Mines, and discusses the results of a similar study by the author.

B-2914

Derndinger, H. -O.
STATUS AND DEVELOPMENTAL TRENDS IN AUTOMOTIVE POWER PLANTS. Translated from German. Motortechnische Zeit, 6(6):277-280, June 1965. 6 refs.

The fields of application of Diesel and Otto motors, of two-cycle and four-cycle systems, and of supercharging are investigated. Attention is called to the tendency toward increase in power and in piston displacement and to the increased commonness of motors with overhead camshafts. Considerable success has been achieved in attempts to improve the combustion in Diesel motors. The increased use of V motors is remarkable. Lastly, attention is called to new types of possible motors for automotive use. It must unfortunately be concluded that the fuel cell and the gas turbine will find no widespread application in automotive uses at least for a long time to come. The NSU oscillatory motor has been able to achieve a good initial success with the production of a small sports car. Nothing can yet be said as to the extent of its later use. (Author's summary, modified)

B-3233

Thürauf, W. and W. Ehnert
THE FORMATION OF NITRIC OXIDE DURING COKING. [Stickstoffmonoxid in Koksofengas.] Translated from German. Brennstoff-Chemie, 47(9):270-273, Sept. 1966.

Experiments were conducted to determine where and when nitric oxide is formed during the coking process, and the manner in which the nitric oxide content of coke oven gas changes during the process of coking. The experiments were conducted on a small scale, employing specially designed apparatus with the thermal energy being provided by an electric heater, in order to eliminate the possibility that coking fuels are responsible for the formation of nitric oxide. It was found that nitric oxide begins to form during the first state at which gas is driven off; and that the extent to which it continues as the temperature is raised depends on the type of coal, its granular structure, and the temperature rise. Formation appears to be complete by the time that the coking coal reaches a temperature of 400° C. In the case of ground coals, the finer the grains the lower the formation of nitric oxide, and vice versa; the reverse being true for coal dust obtained by sifting coal that had been stored in the open air. The NO contents of subsequently heated alcohol extracts from coals are approximately the same as those of the same coals directly heated in a helium atmosphere, and are from four to twelve times as great as the volumes contained in the distillation gases obtained during the coking process. This indicates that approximately 90 percent of the NO which is formed during coking is subsequently decomposed by reactions with the other distillation products. NO is not formed, as formerly believed, through oxidation during coking, but rather from the decomposition of substances which are formed when coal is stored in the open air.

B-6282

Arkhipov, A. S. and A. N. Boytsov
TOXIC AIR POLLUTION FROM SULFURIC ACID PRODUCTION. Translated from Russian. Gigiyena i Sanitariya, Vol. 31, p. 12-17, Sept. 1962. 5 refs.

In order to analyze working conditions in the production of sulfuric acid against a background of technical progress and modernization of the progress, data on air pollution were collected in furnace sections of sulfuric acid shops at 12 chemical plants. Technical progress, the introduction of new calcining methods for pyrite, the mechanization of many manual operations, the introduction of automation features, better ventilation and other means have improved working conditions in kiln shops of sulfuric acid plants. The concentrations of SO_2 in a number of plants producing sulfuric acid have dropped to permissible levels. The reduction in SO_2 concentration to permissible levels and the marked reduction in clinker dust have been achieved even during increased technical progress, greater charges of raw materials and gas per cubic meter of furnace and cubic meter of building volume and the greater production of sulfuric acid plants.

B-7206

Brancato, Biagio
THE INCINERATION OF URBAN SOLID REFUSE IN THE MILAN PLANT. [Incenerimento dei rifiuti solidi urbani nell'impianto di Milano.] Translated from Italian. Fumi Polveri (Milan), 7(4):70-78, April 1967. 8 refs.

The plant consists of a pit where refuse is placed, a bridging van to feed the furnace, a furnace, heaters, filters, a chimney, water purifiers, a central station for electricity, and heat exchangers. The composition of solid refuse varies according to locale. The elementary composition of the Milanese refuse is C-56 percent, H_2-5 percent, O_2-36 percent, and N_2-3 percent. The Milan plant burns up to 600 tons/day, and the heat produced is harnessed to produce electrical energy by means of a 9200 kVA generator. The hot vapor products could be used for industrial heating. The smoke particles are removed by the use of suitable electrostatic precipitators. The water is purified in a cement basin under the cooling system. A flocculation apparatus in this basin purifies the water by means of chemical reagents. The cost of the plant is 5.8 million Italian lire per day. The cost per ton is between 1460 and 1340 lire which is less than the 1550 lire it costs to operate other plants.

B-7949

Sprung, Siegbert
THE CHEMICAL AND MINERALOGICAL COMPOSITION OF CEMENT KILN DUST. [Die chemische und mineralogische Zusammensetzung von Zementofenstaub.] Translated from German. Tonind. Ztg. Keram. Rundschau (Goslar), 90 (10): 441-449, 1966. 7 refs.

Previous investigations into the effect of dust emitted from cement kilns on vegetation have shown that the chemical and mineralogical properties of that dust are poorly delineated. The results of chemical and mineralogical investigations and measurements of the pH-value of 18 various kiln dust samples show that the alkaline reaction of dust with a pH-value higher than 10 depends primarily on the content of clinker phases. The segregation of dust in electrostatic precipitators leads to an enrichment of clinker phases in the preseparating chamber. Consequently the emitted dust in cleaned kiln waste gas, which corresponds at the best with the composition of the dust in the reseparating chamber of the precipitator, contains no or only small quantities of clinker phases and therefore reacts only slightly alkaline at pH-values lower than 10. The results of the chemical and radiographic analyses are tabulated showing the source of the dust, the chemical composition of the 18 dusts analysed, and the pH of a dust-water suspension.

B-8976

Effenberger, Ernst
AIR POLLUTION AND CITY PLANNING. [Luftverunreinigung und Stadtebau.] Translated from German. Z. Präventivmedizin, Vol. 11, p. 601-621, Nov.-Dec. 1966. 73 refs.

The causes of air pollution in the cities are industrial processes (furnace firing), household heating, small businesses, and transport systems. Measures suitable to fight this pollution must attack either at the source (improvement of incinerators, filters, purification of waste gas, etc.) or by permitting a faster distribution and dilution of the pollutants in the air, which can be promoted by measures related to city planning. Some possibilities are: the location of industrial emitters of pollution in that sector of a city with the least wind frequency and screening by parks, increase of the ventilation effect in a city by an appropriate layout of the streets, the promotion of an open building pattern, minimum heights for the smoke stacks of industrial producers of pollution, development of main traffic routes without intersections, and detours for through traffic, etc. The most important causes of air pollution in the cities are the sources of industrial energy in the form of large-scale incinerators, the heating of households and the exhaust gases of automotive vehicles. Burned are coal and oil or products made of these substances. Incinerators using coal dust and outmoded incinerators are particularly important producers of air pollution.

B-9017

Hess, W.
ORGANIZATION AND OPERATION OF THE LABORATORY FOR ATMOSPHERIC HYGIENE OF THE CITY OF ZURICH. [Organisation und Arbeitsweise des lufthygienischen Laboratoriums der Stadt Zürich.] Translated from German. Chemische Rundschau, 17 (15): 3-11, 1964. 9 refs.

The legal foundations for the establishment of the Sanitary Inspectorate; instruments that have been developed for the continuous measurement and sampling of pollutants; problems of automotive exhaust emissions; problems of controlling emissions from industrial sources; and the role of the Municipal Atmospheric Hygienic Commission as a consultant to the Sanitary Inspectorate are discussed. A summary of automotive emissions from gasoline powered vehicles and the results of CO and SO_2 concentrations at various locations are outlined.

B-9254

Nowak, Franz
EXPERIENCES WITH THE STUTTGART REFUSE INCINERATION PLANT. [Erfahrungen an der Müllverbrennungsanlage Stuttgart.] Translated from German. Brennstoff-Wärme-Kraft, 19(2): 71-76, Feb. 1967. 14 refs.

Difficulties that may be encountered in a large steam generating refuse incinerator are discussed in detail. Means of solving these difficulties by improvements and changes are described for the individual plant components. It is concluded that future plant construction could be improved by using tube clusters with separation throughout the entire length; cleaning tubes with soot blowout and by streams of water; limited corrosion of newly constructed furnaces on the heating surface by eliminating the superheater tubes from the flue gas path; limiting the attrition in the combustion chamber by appropriate cladding; protection of tube sections from the flue gas stream by covering them with fitted trays; operation of refuse incineration plants at temperatures no higher than 250° C.

B-9479

Lindaa, Helge
INVESTIGATION OF OIL FURNACES FOR SINGLE FAMILY HOUSES. [Undersøgelse af oliefyr pa villakedler.] Translated from Danish. Varme, 30 (5): 124-127, Oct. 1965.

A survey of 101 randomly chosen oil-fired heating plants in single family houses was conducted in Denmark. The CO_2 level, soot content, and temperature of the flue gases from each furnace were determined. Criteria for proper combustion were at least 10 percent CO_2 in the flue gas, and a maximum soot level of 1-2 on the Bacharach scale (0 = white, 9 = black). Flue gas temperature above 250° C were considered as excessive heat loss. Absolute minimum criteria were 8.0 percent CO_2 and soot at 3 on the Bacharach scale. Results: 51 percent of the plants produced too much soot; 62 percent had less than 8.0 percent CO_2; and 78 percent had more than 20 percent chimney loss due to excessive flue gas temperature. At criteria of 8.0 percent CO_2, 3 Bacharach soot and 250° C flue gas temperature, 9 percent were acceptable. Changing the CO_2 criterion to 10 percent, only 4 percent of the units were acceptable. Graphs of the data are presented, and recommendations for educating oil burner owners are made.

B-9731

Mörtstedt, S. -E.
REPORT ON EXHAUST GAS EMISSIONS FROM GASOLINE-OPERATED CARS WITH FOUR-STROKE ENGINES AT COLD AND HOT STARTS. [Rapport beträffande kall- och varmstart.] Translated from Swedish. Aktiebolaget Atomernergi [Swedish Atomic Energy Company.], BIL-9, BA-SSL-254, 18p., April 20, 1967.

Exhaust gas emissions from gasoline operated cars with four-stroke engines are reported for hot and cold starts, and the results are compared with those of a previous study and with a theoretical prediction. Hot starts produce much less hydrocarbon and CO emission than cold starts. The effects of water-cooling as opposed to air-cooling and automatic as opposed to manual choke are discussed.

B-10035

Mörtstedt, S. -E. and Karl J. Björkqvist
STUDY OF DRIVING PRACTICES IN STOCKHOLM AND GOTEBORG IN MAY AND JUNE 1966. [Kormonsterundersökningar utförda i Stockholm och Göteborg i maj-juni 1966.] Translated from Swedish. Aktiebolaget Atomenergi [The Atomic Energy Corporation], BIL-12, 32p., July 14, 1967.

The driving pattern in each of the larger Swedish cities was examined, partly for the purpose of determining exhaust emission from motor vehicles in Swedish city traffic, partly for a comparison with driving patterns in European continental cities, and partly for an evaluation of the suitability of a common testing procedure for all of Europe.

B-10153

Brohult, Sven
THE SULPHUR PROBLEM AND AIR POLLUTION. [Svavelproblem och luftfororeningar.] Translated from Swedish. Annual Report of the National Academy of Engineers, Sweden, p. 29-34, 1967.

Past and present sampling programs in Sweden show that content of sulfur dioxide in the air has increased considerably with a simultaneous increase in the proportion of sulfur in ionic form in precipitation. The result has been a marked increase in acidity of rain water and in surface water. The levels of acidity in western Europe are discussed, and a map presents the average annual pH content of precipitation. The effect of low pH levels on soils and forest growth are discussed. The contribution of industry to the pollution problem, and the effort made to control pollution are also discussed. Recommendations are given for means of controlling the pollution, in Sweden, from sulfur compounds.

B-10838

Nicolas, P. and M. Martin
ATMOSPHERIC POLLUTION BY WASTE GAS FROM CUPOLA FURNACES: GAS CLEANING. Translated from French. Fonderie (Paris), Vol. 204, p. 54-62, April 1965.

The composition of waste gases from cupola furnaces where pig iron is being melted, is discussed in relation to cleaning methods in use by the foundries concerned. Gas cleaning methods, such as a centrifugal and improved venturi scrubber (on a hot blast cupola, 8 t/hr), and a filter gas cleaning installation (hot gas cupola, 12 t/hr), are described and characterized as excessively costly. Pollutants discussed, with quantities tabulated, included various types of dusts, CO, CO_2, and SO_2. The improvement of the hood gas cleaning installations (with a cold blast cupola, 3 t/hr) is suggested as feasible and economically realistic.

B-10839

Kalbskopf, Karl-Heinz
AIR REQUIREMENTS FOR ACTIVATED SLUDGE PLANTS. [Luftmengenberechnungen fur Belebungsanlagen.] Translated from German. Gas. Wasserfach. (Munich), 102(8):22p., Feb. 24, 1961. 17 refs.

Air supply requirements, specifically for air bubble supply in order to promote the correct BOD, are discussed and theoretical analyses provided to support empirical operation of activated sludge plants.

B-10867

Rasch, Rudolf
TRASH-BURNING INSTALLATIONS WITHOUT AND WITH THE PRODUCTION OF HEAT. Translated from German. Energie (Munich), 17(1):18-26, Jan. 1965. 4 refs.

The yield of heat from the incineration of trash is discussed, as well as some equipment used in incineration. Air pollution is not discussed, except in passing reference to the relation of solid waste disposal to air and water pollution.

B-10887

Ruf, H.
THE ROAD OCTANE NUMBER OF COMMERCIAL AUTOMOBILE FUELS. [Die Strassenoktanzahl handelsüblicher Automobilkraftstoffe.] Translated from German. Automobiltech. Z. (Stuttgart), 67 (3): 93-96, March [1965?].

The road octane number of six swiss regular and high test gasolines were determined in 38 different European automobiles. It was found that some cars tend to knock during acceleration while others showed knock at high speeds. This is caused by the difference in antiknock properties of volatile and less volatile gasoline components. The introduction of tetramethyllead in Switzerland should improve the gasoline quality since it adds a volatile antiknock component. For acceleration knock the research octane number of the gasoline and its volatile components is important. For high speed knock the research octane number as well as a good motor octane number are important.

B-11411

Andritzky, M.
GARBAGE POWER PLANT MUNICH. [Müllkraftwerk München.] Translated from German. Brennstoff-Wärme-Kraft, 14(5):232-233, 1962.

The refuse power plant in Munich is described and the seasonal changes of the garbage collected (composition and heating value shown in graphs) are described in comparison to those in Antwerp, Rotterdam and Vienna. The power plant burns approximately 60 percent coal dust and 40 percent garbage in separate combustion rooms of a common high-pressure steam generator. The first version of the plant has a capacity of 68 million watts and supplies steam for a long-distance heating system. After the second construction phase and a capacity of 100 million watts, all garbage collected in the city of Munich can be burned in this plant. The installation is shown in a diagram. Purification of the flue gas is emphasized. An electrofilter providing 99.75 percent dust removal is mentioned, and the pneumatic transport of flue ash from the boiler to a collecting bunker is described. The proximity of an airport limited the height of the smokestack to 80 meters.

B-11412

Engel, W. and A. von Weihe
EXPERIMENTAL REFUSE INCINERATION PLANT OF THE DÜSSELDORF MUNICIPAL WORKS, FLINGERN POWER PLANT. [Müllverbrennungs-Versuchsanlage der Stadtwerke Düsseldorf, Kraftwerk Flingern.] Translated from German. Brennstoff-Wärme-Kraft, 14(5):234-236, 1962.

The experimental refuse incineration plant in Duesseldorf consists of a charging facility, several consecutive roller grates and a traveling grate. These units are coupled and electrically regulated. The experimental plant was put into operation on March 21, 1961, and by the beginning of February 1962 it had processed 140,000 m^3 of refuse in about 3500 operating hours. The comparison of the official measurements for the incineration of Duesseldorf refuse on forced-feed and travel grates with measurements in the experimental plant show the following advantages for the experimental plant: Its firing efficiency is 83 percent, approximately 30 percent higher than the tests on forced feed grates. Since the firebox temperature is correspondingly higher, it fulfills all hygienic requirements which can be made of a refuse incineration plant. The accumulation of fly ash in the raw gas in considerably below the values derived in comparable tests with force-feed grate. In the summer months it is 1 gm/m^3, in the winter months it is 2 to 2.5 gm/m^3. No noxious components were detected in the flue gases. The results confirm the belief that the roller grate is suitable equipment for a refuse incineration plant.

B-11413

Kammerer, H. F.
WASTE INCINERATION PLANT WITH HEAT UTILIZATION IN STUTTGART. [Müllverbrennungsanlage mit Heizwärmeverwertung in Stuttgart.] Translated from German. Brennstoff-Wärme-Kraft, 14(10):476-478, 1967. 2 refs.

The development of a waste incineration plant with heat utilization in Stuttgart Germany is discussed and the essential elements of the plant are described. It incorporates the knowledge gained from existing refuse power plants and experimental plants adapted to local conditions. The power plant burns heavy fuel oil and refuse in separate combustion chambers of a common steam generator. Electrofilters with a 98 percent degree of separation are planned for removal of dust. The heat produced is fed into the city heat supply via the steam collecting lines of the power plant. The heat utilization system is illustrated and discussed. A steam generation of approximately 30 tons/hr per refuse furnace is expected. Economic aspects, including capital cost, are briefly mentioned.

B-11427

Albinus, G.
INCINERATION OF REFUSE: FUNDAMENTAL CONSIDERATIONS ON THE PROBLEM OF TRASH DISPOSAL BY INCINERATION. [Müllverbrennung: Grundsätzliche Überlegungen zu Fragen der Müllbeseitigung durch Verbrennen.] Translated from German. Brennstoff-Wärme-Kraft, 14(5):215-217, May 15, 1962.

The difficulties encountered in the disposal of refuse by incineration are discussed. The properties of refuse, the possibilities of influencing the heating value, and the technological processes of household waste incineration are discussed, and the requirements for the construction of the firebox are deduced from them. The incineration process can only proceed satisfactorily if the following basic conditions are fulfilled: The trash must have a satisfactory supply of oxygen; the trash and the oxygen in the air must have as close a contact as possible, for example by loosening the fuel bed; and a complete combination of the oxygen with the trash requires sufficiently high ignition and combustion temperatures. The types of trash incineration, the dust problem, and heat utilization are also discussed.

B-11428

Müller, H.-J.
TRASH INCINERATION ACCORDING TO THE VOLUND SYSTEM. [Die Müllverbrennung nach dem System Volund.] Translated from German. Brennstoff-Wärme-Kraft, 14 (5):219-223, 1962. 13 refs.

The installation of St. Ouen (Paris) and its operational results are presented as examples of the Volund trash incineration system. The trash is piled as high as 30 meters and fed into the filling funnel, which unilaterally tapers downward, by two orange peel buckets (one in reserve) each with 3m^3 volume capacity and a load capacity of 6 tons. The trash moves through a shaft to the drying grate where it is dried by the radiation from the drying chamber and the convection of the flue gases rising out of the incineration chamber. The flue gases with a high steam content which are produced during the drying process are passed through a 13.5 m long vapor channel into the mixing and after-burning chamber. On a second grate, the incineration grate, the trash is finally ignited and burned. From the experiences of this installation which has a throughput of 323,000 tons per year of trash, the largest of its kind in Europe, a combination of the rotary-drum furnace with a waste heat boiler was developed which has favorable space utilization through combining the drying, incinerating, and heat transfer components into a single unit.

B-11429

Zankl, W.
THE CELL GRATE TRASH DISPOSAL INSTALLATION. [Die Zellenrost-Müllvernichtungsanlage.] Translated from German. Brennstoff-Wärme-Kraft, 14(5):224-225, 1962.

The basic construction principles of a cell grate incinerator trash disposal installation system are described. Such installations (of which some 274 have been built since 1901) are suited for a capacity of roughly 175 tons per 24 hours. Utilization of the heat produced generally can be considered only in terms of steam or hot water production, primarily for supplementing an already established heating network. Linkage with an electrical current generation system is scarcely economical in this size range. The installation is illustrated by a diagram and photographs.

B-11430

Kern, A.
VIEWS ON THE DESIGN OF MODERN INCINERATION INSTALLATIONS FOR URBAN TRASH. [Gesichtspunkte für die Auslegung neuzeitlicher Verbrennungsanlagen für Stadtmüll.] Translated from German. Brennstoff-Wärme-Kraft, 14(5):225-227, 1962.

Some economic considerations on refuse incineration, particularly on the problem of conditions suitable to the utilization of heat produced, are given. The guarantees and construction conditions which must be considered in the evaluation of a trash incineration installation are discussed. Low flue gas velocities must be chosen and opportunities for the removal of flue ashes inside the boiler must be created, in order to keep the abrasive effect of high sand content in the trash on the boiler tubes low. Flue gases from trash incineration must be cooled before entering the boiler to a point below the softening temperature of the trash ashes. Clogged tube arrangements are above all to be avoided in the connected heating surfaces, since deposits which cannot be removed by the ordinary cleansing apparatus, such as ball-moving and soot blowers, will of necessity have to be removed by hand. Slag must be discharged without raising dust and must be tightly air-sealed against the firebox. A high quality dust-removal device must be present. The Martin system, the Sao Paulo incineration installation, and the trash power plants now under construction in Rotterdam and Munich are characterized.

B-11431

Kampschulte, J.
GARBAGE INCINERATORS IN HAMBURG AND THEIR EXTENSION THROUGH THE ADDITION OF VON-ROLL-INCINERATORS. [Die Müllverbrennung in Hamburg und ihre Erweiterrung durch Von-Roll-Öfen.] Translated from German. Brennstoff-Wärme-Kraft 14(5):228-231, 1962. 10 refs.

The extension and modernization of the refuse furnace plant located in Hamburg, Germany by the addition of two Von-Roll refuse incinerators with a capacity of burning a charge of 200 tons per 24 hours, each with one auxiliary waste-heat boiler (with a boiler power of 15.5 tons per hour) is described and illustrated. The experiences gained in the operation of these furnaces are reported. When three more of these furnaces will be operational, it will be possible to burn more than one million m^3 of garbage annually and to produce 60 to 70 GWH. Further development of the system will lead from an incinerator with a waste-heat boiler to a uniformly structured garbage incinerator with an initial charge of 200 tons per 24 hours, which will require considerably less space.

B-11432

GARBAGE INCINERATION PLANT COMBINED WITH THE DRYING AND BURNING OF SEWAGE SLUDGE. [Müllverbrennungsanlage kombiniert mit Trocknung und Verbrennung von Klärschlamm.] Translated from German. Brennstoff-Wärme-Kraft, 14(5):231, 1962.

A refuse incineration plant combined with the drying and burning of sewage sludge for a town of approximately 14,000 inhabitants is described. Simultaneously with the burning of garbage, a drier for the sewage sludge is combined with the garbage combustion, with the latter furnishing the heat necessary to dry the former. This permits the efficient utilization of the heat produced by combustion. After drying, the sewage sludge is burned along with the garbage in the incinerator. The plant is calculated for a normal output of 3 tons per hour. A diagram of the process is shown.

B-11435

Presske, Paul
PROPOSAL FOR THE INDUSTRIAL TREATMENT OF BERLIN CITY REFUSE MATERIALS. [Vorschlag zur industriellen Aufbereitung städtischer Abfallstoffe Berlins.] Translated from German. Silikattechnik, 12(11): 502-508, 1961.

On the basis of a detailed analysis of refuse composition in Berlin, a complex refuse processing scheme is proposed. Household refuse is utilized in the following manner: 25 percent (the fraction over 60 mm) is incinerated with heat utilization for power and steam generation, 20 percent (fraction of 0-4 mm) is sintered and used in the building industry, and 48 percent (fraction between 4 and 60 mm) is composted into fertilizer. The process involves magnetic separation of iron, sieving, centrifuging, incineration, and sintering. It is especially adapted to the economic conditions prevailing in Berlin. Special equipment, such as vehicle scales, locomotives, telephone networks, and the vehicle cleaning machinery, are operated economically, and efficient administration procedures are possible. The proposed multi-function plant is compared with the latest comparable installations in other cities. The effective utilization of the resulting ash sinter for building materials is detailed. Regarding gaseous combustion products, the flue gases of the sinter belt, with a temperature of approximately 200° to 250° C, can be used for biothermal composting or for drying green fodder.

B-11436

Huch, R.
CORROSION BY HYDROGEN CHLORIDE IN REFUSE INCINERATORS. [Chlorwasserstoffkorrosionen in Müllverbrennungsanlagen.] Translated from German. Brennstoff-Wärme-Kraft, 18(2):76-79, Feb. 1966. 9 refs.

Polyvinylchloride and other organic material containing chlorine is converted to hydrogen chloride and chlorine during incineration and thus can cause serious damage to incinerators by corrosion. Air pollution damage is indicated only in terms of flue gas composition. The corrosion mechanism was studied in detail and equations describing the interaction between HCl and iron oxides were formulated. The corrosion rate was found to depend on the concentration of the gaseous HCl and Cl_2, the temperature of the tube surface, and the concentration of the chlorine compounds at the tube surface. Chemical analyses of corrosion products are given together with case histories of corrosion damage. The corrosion process is explained in terms of iron chloride and iron oxide formation.

B-11438

Moegling, E.
PRACTICAL ASPECTS OF REFUSE INCINERATION USING THE EXAMPLE OF ESSEN-KARNAP. [Praxis der zentralen Müllverbrennung am Beispiel Essen-Karnap.] Translated from German. Brennstoff-Wärme-Kraft, 17(8):383-391, Aug. 1965. 2 refs.

Various aspects involved in the planning of refuse incineration plants are discussed. Detailed data of the Essen-Karnap power plant which serves a very wide area of refuse collection, are given. This plant is the largest refuse incineration plant existing at present. It has a capacity of 2000 tons of domestic and industrial refuse and 2000 tons of sludge per day. Performance data, components of the refuse power plant, supply and storage facilities for household refuse, discharging of refuse, refuse transportation and loading, incineration of used oils, slag transportation and treatment, and furnace operation are described. Simultaneous co-incineration of high-calorific value industrial refuse is being attempted experimentally. A large portion of the acid-forming ingredients undergoes chemical reaction with the refuse slag and fly ash originating from powdered coal firing, thereby reducing the emission of SO_2, SO_3, HCl, etc, into the flue gas. The aim is to establish a ratio of industrial wastes to domestic refuse which will provide the desired flue gas composition. At present refuse to be incinerated must contain less than 1 percent sulfur.

B-11439

ON THE STATE OF REFUSE INCINERATION IN GERMANY. [Zum Stand der Müllverbrennung in Deutschland.] Translated from German. Brennstoff-Wärme-Kraft, 17(12):594-595, Dec. 1965.

Refuse incineration plants operating in 17 different German cities are listed, together with their capacities and methods of incineration, steam output, main fuel used, and furnace design. The ranges of refuse calorific value (kcal/kg) and the method of flue gas cooling (chiefly by steam generation, in one case air, one water, one clarifier sludge drying) are tabulated. The following grate systems are used in the individual plants: moving grate, advancing and retracting grate, rotating and tipping grate, and Volund rotating furnace. By 1970 there will be an installed capacity of 3 million tons per year in West Germany. This assumes planned and on-going new construction in Berlin, Frankfurt, and Munich, as well as in eight other cities.

B-11440

Knoll, H.
REFUSE INCINERATING PLANT OF THE CITY OF NUERNBERG. [Müllverbrennungsanlage der Stadt Nürnberg.] Translated from German. Brennstoff-Wärme-Kraft, 17(12):595, Dec. 1965.

The refuse incineration plant in Nurnberg (Germany), scheduled for operation in fall of 1968, is described. It has a daily capacity of 300 to 360 tons of refuse. New types of oil fired furnace chambers are used: the temperature of the combustion gases is kept low by the admixture of secondary air, preventing the slag from baking together. The steam boilers generate steam of

84 atm and 450° C and have a capacity of 27 to 34 tons/hr each. A new autoclave process for sludge clearing is also being designed. The sludge is sterlized by heating to 200° C, the colloids are broken, the sludge is filtered and the dry sludge is ground and used as fertilizer. Two hundred tons of dried sludge (40 percent water content) will be produced per week. Eventually the plant may be enlarged to supply some 450 tons of dried sludge per week. It is estimated that 50 percent of the sludge will be used in agriculture and the remainder, representing about 10 percent of the entire amount of refuse, will be incinerated.

B-11447

Palm, R.
COMPOSITION OF REFUSE AND REFUSE INCINERATION. [Müllzusammensetzung und Müllverbrennung.] Translated from German. Aufbereitungs-Technik, 4(12): 561-565, Dec. 1963. 7 refs.

An attempt is made to characterize refuse by its constituents. The refuse is differentiated according to various mixing proportions of the lignitic constituent and the coal component. The kinds of mixtures within each component have been classified in accordance with their percentage of really combustible materials and the content of real slag. The burning conditions in these groups, i.e. the quantities of smoke gas produced and the burning temperature as a function of the useful heating power, can be determined provided the estimated melting point of the slag is taken into account. It is advisable to judge the burning conditions on the basis of the types of refuse, according to the region, the customs and working conditions of the population and the supply of fuel and the heating methods practiced in the region. The composition of refuse from some European and American cities, and its effect on combustion is discussed. Analyses of the slag from refuse are important. The properties of the slag influence not only the temperature and the combustion conditions in the different layers of the combustible, but will determine whether the flue gases are suitable or not for the production of energy. It is especially important to know the temperatures that can be obtained in the combustion chamber, with the different types of refuse. The admissible temperature of the fire-bed is determined by the supposed melting temperature of the slag. The air excess will be determined correspondingly. The melting point of the refuse slag which may not be exceeded lies between 1000 and 1440° C.

B-11448

Peters, Wulf
METHODS OF REFUSE INCINERATION WITH PARTICULAR CONSIDERATION OF THE CONDITIONS IN GERMANY. [Die Verfahren der Müllverbrennung unter besonderer Berücksichtigung der deutschen Verhältnisse.] Translated from German. Aufbereitungs-Technik, 1(8): 329-339, Aug. 1960. 19 refs.

A short historical review covering the 65 years of refuse burning in Germany is followed by a description of the plants at Hamburg that are still in action and of the reconstruction and enlargement they are currently undergoing. The preliminary investigations that preceded the designing of an incineration plant for industrial waste are described. A project that will be constructed in an industrial area is listed as an example of the plans under consideration in numerous German cities. This project provides for a large burning plant in an existing power station. Some of the systems of refuse burning offered by German firms are described.

B-11449

Kallenbach, K.
TRASH INCINERATION PLANT WITH ROLLER GRATE FIRING FOR THE CITY OF HAGEN. [Müllverbrennungsanlag mit Walzenrostfeuerung für die Stadt Hagen.] Translated from German. Brennstoff-Wärme-Kraft, 16(8):406-407, Aug. 1964.

A trash incineration plant with roller grates to be constructed in Hagen, Germany is described. The installation includes 3 firing units with a maximum trash throughput capacity of 6 tons per hours, each corresponding to a total trash throughput of more than 400 tons per day. The recovery of heat or the sale of the steam or hot water should be possible at any time and on such a scale that delivery contracts could be concluded.

B-11450

TRASH PREPARATION WITH THE GORATOR. [Müllaufbereitung mit dem Gorator.] Translated from German. Brennstoff-Wärme-Kraft, 16(8): 404-405, Aug. 1964.

The slanted runner machine [Gorator] is suited for the moving, pulverization, mastication, and mixing of non-homogenous materials of the most varied types including fibrous, doughy, and highly viscous materials, muds, and solid fuels. It has been proposed that it also be used for the homogenization of refuse - if necessary with the admixture of combustibles - in order to allow the transportation of a more uniform material with a finer structure to the refuse incineration installation. For this purpose, the Loading-Screw Gorator is especially well suited. The operation of the Gorator is described and illustrated.

B-11455

Comberg, G. and H. -F. Wolfermann
FURTHER INVESTIGATIONS ON THE HARMFUL GAS CONTENT OF AIR IN HOG BARNS WITH SLOT FLOORS. [Weitere Untersuchungen zur Frage schaedlicher Gasgehalte in der Stalluft von Schweinestaellen mit Spaltenboden.] Translated from German. Bauen auf dem Lande, 17(2):46-49, 1966. 2 refs.

The content of CO_2, NH_3, and H_2S, as well as general climatic conditions were measured in hog barns having slot floors and a manure pit within the barn. The measurements confirmed that no objectionable concentrations of undesirable and dangerous gases are formed, even during prolonged storage of liquid manure. Pumping off or drainage of the feces-urine mixture without prior stirring into a pit located outside the barn produced a minor but harmless elevation of the gas concentration. Mechanical, hydraulic and pneumatic stirring in order to homogenize the liquid manure prior to pumpoff, produced either the formation of H_2S or its increase if it was already present. The concentrations exceeded the maximum permissible values and were injurious to the animals.

B-11457

Brunner, M., H. Hoffmann, O. Hettche, L. Truffert, W. Hess, T. Müller, D. Högger, M. Brunner, J. Richter, and R. Frick
AIR POLLUTION BY MOTOR VEHICLE EXHAUST GASES. [Die Verunreinigung der Atmosphäre durch die Abgase der Motorfahrzeuge.] Translated from German. Alimenta (Kilchberg), 4(6):213-220, 1965. (Summaries of papers presented at a symposium held by the Swiss Commission from Air Sanitation, Zurich, Sept. 22-23, 1965.)

A review of several lectures presented at the Federal Commission for Air Hygiene in Zurich, Switzerland on pollution of the atmosphere by motor vehicle exhaust gases is presented. The following lectures are included in the form of brief communications: 1. The composition of exhaust gases produced by gasoline-burning engines; 2. The composition of exhaust gases of diesel engines; 3. The pollution of the atmosphere in traffic centers of large cities abroad; 4. Air pollution caused by the exhaust gases from the automobile in Paris and its environs; 5. Survey of investigations of the air conducted in Zurich from 1961 to 1965; 6. The pollution of the atmosphere-observations in Switzerland; 7. Effects of exhaust gases on humans, animals, and plants; 8. The influence of the fuel composition; 9. Traffic sanitation and hygiene of the air; and 10. Police regulations and their enforcement. Pollution of the atmosphere by motor vehicle exhaust gases in Switzerland is emphasized.

B-11461

Tanner, R.
THE DEVELOPMENT OF THE VON ROLL-INCINERATION PLANTS. [Die Entwicklung der Von Roll- Müllverbrennungsanlagen.] Translated from German. Schweiz. Bauztg., Vol. 83, p. 251-260, April 22, 1965. 11 refs.

The engineering history during the 20 year development of the Von Roll refuse incineration system is described and the results evaluated. The experiences and observation of the rotary drum furnace in Basel led to the replacement of the drum by a perpendicular shaft (slag generator) as a burn-out elements, a development which substantially reduced the dimensions of the furnace. In another plant in Hamburg, the arrangement of the predrying and main grates was changed so that they were one behind the other, moving in the same direction. As a result, the delicate false floor of the Bern type was discarded. The application of down-draft preheating and flue gas recycling in another plant in Hamburg, allowed a substantial increase in capacity. Future developments and the technical possibilities of refuse incineration today are discussed. Few references to air pollution are made, except for incidental mention of such points as "smoke limit-about 750° C," boiler cleansing, and used oil incineration. A brief concluding paragraph discusses the German norm of 150 mg/Nm^3 as the maximum allowable concentration of dust emitted from smoke stacks, and mentions 80 to 120 meters as effective stack heights. Harmful gases are mentioned but not discussed.

B-11636

Wotschke, J.
UNIVERSAL WASTE REMOVAL AND ITS REALIZATION WITH THE FLAME CHAMBER MELTING PROCESS. [Universale Abfallbeseitigung und ihre Verwirklichung durch das Flammenkammer-Einschmelzverfahren.] Translated from German. Brennstoff-Wärme-Kraft, 16(8):383-391, Aug. 1964. 23 refs.

The flame chamber melting process meets the requirements for a truly universal process for refuse disposal. It is able to accept and process all waste whether it is in solid, liquid, or gaseous form without shying away from calorific values which are too high or too low, or from difficult combustion or slag behavior. The process is described and illustrated. The melting process eliminates the difficulties of refuse incineration by considerably increasing the incineration temperature. The refuse lining the flame chamber is completely dissolved into dust-free, hot flue gas generated by combustible matter and into melted matter from incombustible objects. It allows for a considerable reduction of the volume of slag and better properties of this slag for storing and use. Theoretical aspects of the process are considered in detail. The technical solution for using the flame chamber process is illustrated for two cases, one for 5000 kg per hr refuse throughput corresponding to about 100,000 inhabitants and one for 500 kg per hr corresponding to about 10,000 inhabitants. In both cases the same processing characteristics are present.

B-11637

Andritzky, M.
SECOND EXTENSION OF THE REFUSE POWER PLANT IN MUNICH. [Zweiter Ausbau des Müllkraftwerks München.] Translated from German. Brennstoff-Waerme-Kraft, 16(8):403, Aug. 1964.

The differences between the design of the second stage of the refuse power plant in Munich and the first stage are outlined. The refuse firing in the first construction stage was designed so that approximately 40 percent of the steam output is obtained from refuse, in the second stage the contribution of the refuse is only 20 percent. Instead of the two originally planned steam generators with approximately 32 tons per hour refuse throughput each, there will only be one with a throughput of 40 tons per hour. The third factor in which the second stage differs from the first one is that there is no separation in the former between the combustion chamber for refuse and powdered coal.

B-11638

Angenend, Franz-Josef
THE STATE OF REFUSE INCINERATION IN THE USA. [Der Stand der Müllveraschung in den USA.] Translated from German. Brennstoff-Wärme-Kraft (Fuel-Heat-Power), 17(8):396-398, Aug. 1965.

The state of the refuse incineration industry in the United States is discussed on the basis of presentations made at the National Incinerator Conference held in New York, 1964. Covered are the planning of incineration units, storage, dumping slag utilization, furnace systems, cooling and flue gas utilization, purification of flue gases, e.g. by dust precipitation and elimination of air pollution. Settling chambers, wet scrubbers, cloth filters, cyclones, and electrostatic precipitators are discussed. Domestic incinerators are criticized as unsatisfactory, causing 25 percent of all complaints for excessive smoke and odor in New York. It is concluded that most existing refuse incineration plants are not substantially automated and require a large number of operating personnel. In most cases the purification of waste gases is not satisfactory. Maximum emission standards, and their variation in different cities are discussed. Refuse incineration and technology is probably functioning at a higher level in Germany than in the USA at the present time. It is emphasized that refuse incineration technology requires a larger amount of scientific research than it has been receiving in the past. Some novel developments, including a double mantle upright cylindrical combustion chamber, a rotating drum installation and a moving-grate firing installation (which is illustrated) are discussed.

B-11640

Bachl, Herbert and Franz Maikranz
INCINERATION OF REFUSE IN A HIGH-PRESSURE STEAM PLANT. [Erfahrungen mit der Verfeuerung von Müll in einem Hochdruck-Dampfkraftwerk.] Translated from German. Energie, 17 (8):317-326, Aug. 1965.

Refuse is used as a fuel in two high-pressure superheated steam boilers at the "Nord" power station of the Munich municipal system. The boilers are designed for burning coal or refuse, either alone or in combination. The technical features of the plant are given in detail, including the site-map of the station, boiler design data, construction history 1961-65, firing mechanism, and experience in operation. The design and operation of a refuse shed and crane are discussed, and experimental runs with coal and refuse firing are described. Refuse averaged 45-50 percent of ash and was found to contain only 1.64-2.48 percent of scrap metal. The storage bin and loading area did not attract rats of vermin. Refuse feeds of 25 tons/hr were achieved with a caloric output of 1200-1300 kcal/kg. The percentage of refuse in the overall operation will be about 35 percent. The refuse-generated power would have negative prices due to the city subsidies. The financial advantages would benefit the city administration and the government. Refuse combustion will supply about 10 percent of the total future power requirement of Munich. Air pollution is not discussed, except indirectly, in terms of the high combustion efficiency of the coal burned, and the presence of an electrostatic precipitator in the system.

B-11647

Fischer, Franz
THE REFUSE INCINERATING PLANT IN VIENNA. [Die Wiener Müllverbrennungsanlage.] Translated from German. Brennstoff-Waerme-Kraft, 16(8):392-396, Aug. 1964.

A plant designed for the incineration of 600 tons of refuse daily, and also capable of burning used oil, is described. Three steam generators produce a maximum of 15 tons of steam per hour for remote heating and power production. The plant design is illustrated and discussed in detail, including storage of the refuse, the slag generator, an electrical current generating plant, and a system for utilization and disposal of used oil from industrial plants. Air pollution aspects are mentioned only incidentally, in connection with flue-gas recirculation for control of combustion-chamber temperature. The gas is transported from an electrostatic filter through a mechanical flue gas purifier. The presence of large amounts of fly ash and the advantages of an angle-tube boiler for easy cleaning of heating surfaces are mentioned. The experiences gained during the first year of operation are also discussed.

B-11649

Gruetsky, Werner
HEAT TECHNOLOGICAL MEASUREMENTS IN A REFUSE INCINERATING PLANT. [Wärmetechnische Messungen an einer Mullverbrennungsanlage.] Translated from German. Tech. Uberwach. (Dusseldorf), 4(6):211-214, June 1963.

Measurements conducted in an experimental refuse incinerating plant to establish the heat technological parameters that may serve as a basis for a larger project are reported. The following measurements were made: the refuse combusted and the amount of ash removed; the amount of fuel oil used; the amount of steam generated; the amount of cooling water used; the pressure at the steam outlet and the superheater; temperature; composition of the gas; SO_2 and SO_3 content of the flue gases; content of acetic acid and aldehyde; biological studies on the ash cooling water; moisture content of the flue gases; and special analysis of the ash including specific heat and calorific value of the ash. The efficiency of the refuse incinerating plant was 56.7 percent. For maintenance of purity of the atmosphere, the requirement is imposed on refuse incinerating plants that the flue gas after 1000 fold dilution - as it is assumed to be at the exit of the smokestack - must show only one-tenth of the maximum working site concentrations tolerated for acetic acid and formaldehyde. The measured corresponding values represented but fractions of the maximum permissible emission values.

B-11651
Hanstedt, Walter
PLANNING OF REFUSE ELIMINATION AND UTILIZATION PLANTS IN THE RUHR AREA WITH EMPHASIS ON MAINTAINING THE PURITY OF THE AIR. [Planung von beseitigungs-und Verwertungsanlagen für Müll im Ruhrgebiet im Hinblick auf die Reinhaltung der luft.] Translated from German. STAUB, 23(3):218-225, March 1963. 6 refs.

A working group comprising 22 townships was established in the German Ruhr area to develop and implement measures for refuse removal. Four possibilities of disposal are listed: the deposition of refuse in alternating layers with soil, composting of refuse, incineration combined with heat utilization, and incineration without heat utilization. The advantages and disadvantages of these methods are discussed in detail, with special emphasis on air pollution by fly ash. Experience with a composting plant in Duisburg showed that for odor removal air coolers and scrubbers had to be installed. Finally a process was adopted which used chlorine dioxide for decomposing organic compounds. It is recommended that composting plants be located at least 500 m from residential areas. In refuse incineration it is shown that there is a difficulty in finding markets for the heat produced. An example of a large incineration plant with heat utilization in Karnap is given and it is emphasized that incinerators can be used in combination with peak power plants. Experience with a small incinerating plant without heat recovery is also described.

B-11655

Kachulle, C.
REFUSE INCINERATING PLANTS WITH OR WITHOUT HEAT UTILIZATION. A MAIN SUBJECT OF THE THIRD CONFERENCE OF THE INTERNATIONAL WORKING GROUP FOR REFUSE RESEARCH, TRIENT, 1965. [Abfallverbrennungsanlagen mit oder ohne Wärmenutzung. Ein Hauptthema des dritten Kongresses der Internationalen Arbeitsgemeinschaft für Mullforschung in Trient, 1965.] Translated from German. Brennstoff-Wärme-Kraft, 17(8):391-395. Aug. 1965.

Several refuse research topics were discussed, including refuse incineration with heat utilization for steam generation. A cost comparison of a refuse incineration plant in Issy-les Moulineux which has four furnaces with a capacity of 17 tons/hr each, showed that income from the sale of electric power and steam exceeds the operating expense. In Glasgow, Scotland, it was found that the electricity generated in refuse combustion cannot be sold in Great Britain on a continuous basis. Another topic discussed was a central refuse disposal plant installed as additional incineration units in existing power plants. Such an installation is being operated in Goldenberg, near Cologne, Germany. The operating capacity of this unit is 1,026,000 tons/year. The planning and design for the Goldenberg plant are illustrated and discussed in detail, including refuse transportation from a wide area on compactor trucks with removable bodies, rubbish and scrap processing, moving grate incineration, and refuse storage in surrounding mines. The advantages of large central incineration plants are discussed.

B-11657

Meyer, G.
DESIGN AND OPERATION OF A MS COMBUSTION CONE PLANT WITH REFUSE. [Aufbau und Wirkungsweise einer MS-Brennkegelanlage mit Müllzerkleinerung.] Translated from German. Aufbereitungs-Technik, No. 3, pp. 135-138, 1964.

The design and operation of a MS combustion cone plant including the crushing installation for refuse are described. The unsorted refuse is dumped by truck into a refuse bin where it is dried. At the bottom of this bin, a combined discharging and crushing installation is provided which reduces the refuse to a desired size (pieces whose edges are 40 cm long) and discharges the material from the bin. By means of a steel plate conveyor the material is fed into the combustion cone housing and thrown on to the combustion cone grate. With plants for a throughput of 1500 kg per hr of refuse, the combustion cone has a maximum diameter of approximately 3.2 m and rotates with a speed of 30 to 40 cm per minute relative to the maximum circumference. The ignition of the material is effected by a Schoppe burner operated optionally with oil or gas. The design and control of the blowers in the system, calculated to prevent the emission of odoriferous or harmful gases, is discussed and illustrated.

B-11666

Wuhrmann
POSSIBILITIES AND LIMITS OF WASTE INCINERATION [Möglichkeiten und Grenzen der Müllverbrennung.] Translated from German. Aufbereitungs-Technik, 5(9): 506-507, Sept. 1964.

Several lectures presented at the Third Waste Technological Colloguium which considered the technological and practical aspects of the process of waste incineration are summarized. The lectures included the technical basis of waste incineration, various incineration systems and the problems concerning fireproof materials, and the experiences in the Stuttgart incineration project. It became apparent that the problem of selecting a suitable incineration system is not yet solved, especially for medium sized plants which still face extensive development and expansion. Aspects discussed include the ignitability of the refuse, transportation to the plant and weighing, the refuse bin, handling of the fire, removal of the slag, and selection of grates. Legal requirements for air pollution control are mentioned and some data given - e.g. a limitation of 0.4 mg/m^3 of SO_2 emission.

C-3775

Gräfe, Kurt and Joachim Hagen
DETERMINATION OF MINIMUM STACK HEIGHT IN CONSIDERATION OF SURROUNDING BUILDINGS. [Zum Problem des Für die Bebauung zu berücksichtigenden Umkreises bei der Festlegung von Schornsteinmindest höhen.] Translated from German. STAUB, 26(9):391-392, Sept, 1966. 7 refs.

In order to calculate the distance from the stack covering the area where buildings have to be considered, a formula is derived from the equation for the distribution of the SO_2-concentration in the surroundings of a source. Thus a suggestion is made as a basis for discussion with regard to an addition to the TAL - Techn. Anleitung Reinhaltung der Luft (a paper containing among other things rules for minimum stack heights). An example illustrates the possibilities of practical appliance.

C-9460

Bardelli, Umberto
MICROMETEOROLOGY AND AIR POLLUTION. (2nd PART.) [Micrometeorologie e inquinamento dell'aria. (2ª Parte).] Translated from Italian. Fumi Polveri, 6(5):133-141, May 1966.

General aspects of micrometeorological effects on air pollution are discussed. A research proposed to impede the formation of smog in cities is presented. The method consists of constructing a tube with convenient height and placing it vertically in the polluted zone. Then very hot air is blown into the tube, under very high pressure. The hot air will rise and finally collide with the 20° C - 70° C stratum, go through it and ultimately expand above the stratum and will again have a normal temperature distribution. The air cools, descends and permeates the 20° C - 70° C stratum and dilutes it. The ascending shock tears and mixes the stratum, and the descending air dilutes it.

C-10787

Fabry, Ch. and H. Buisson
THE ABSORPTION OF RADIATION IN THE LOWER ATMOSPHERE AND THE AMOUNT OF OZONE. [Sur l'absorption des radiations dans la basse atmosphère et le dosage de l'ozone.] Translated from French. Compt. Rend. (Paris), Vol. 192, p. 457-461, 1931. 4 refs.

Optical density is computed for different wave lengths in order to show that absorption of visible radiation by the atmosphere is produced by an ozone layer of 0.0022 cm/km air. An increased absorption in the short wave lengths is probably due to the presence of oxygen. The calculated concentration of ozone required to produce the observed absorption (or 4.3 mg/100 m^3 air at 15° C) is of the same order of magnitude as can be obtained by chemical analysis. If the atmosphere contained the same proportion of ozone at all heights, the total density of ozone in the earth's atmosphere would be 0.18 mm.

C-10789

Goetz, F. W. Paul and Rudolf Ladenburg
THE OZONE CONTENT OF THE LOWER ATMOSPHERIC REGIONS. [Ozongehalt der unteren Atmosphärenschichten.] Translated from German. Naturwissenschaften (Berlin), Vol. 18, p. 373-374, 1931.

Using light from a mercury lamp, quartz spectrographs were used to analyze the light 1.2 km and about 4.8 km away. Thus the absolute air permeability of a 3.6 km air space at 2 300 m altitude were determined. Absorption increased strongly with decreasing wavelength. At shorter wavelengths, some constituent of the atmosphere prevents sunlight from penetrating the atmosphere at the short-wave end of the ozone absorption band. Similar work elsewhere is discussed. The results indicate that ozone must also be present below those atmospheric layers that participate in the dispersion of sunlight.

C-10801

Bozza, G.
ATMOSPHERIC POLLUTION CAUSED BY LARGE CURRENTS. [Inquinamento atmosferico provocato da sorgenti estese.] Translated from Italian. Ric. Termotechnica, No. 14, Reprint, 1964.

Atmospheric interactions such as heat diffusion, which play a role in the basic pollution of a residential area are considered in a quantitative study for the comparative evaluation of air pollution levels. Calculations are presented for the concentration, at ground level and at various heights, of a gaseous pollutant diffusing freely in a still atmosphere. The values obtained, from which actual concentrations can be calculated, are those of equilibrium pollution, not assuming any special meteorological conditions which can produce serious danger; they provide a means of comparison for residential areas of different extension and shape. Several typical shapes of areas are examined. Pollution is proportional to the total emission from a square and inversely to the side. The maximum level of pollution, near the ground, tends to be proportional to twice the thickness of the diffusion layer, instead of to the side of the square. The values of the turbulent diffusion coefficients are discussed and the dangers of low air turbulence in large towns are emphasized.

C-10885

PHYSICAL PRINCIPLES FOR DEVELOPING A METHOD OF COMPUTING ATMOSPHERIC DISPEPERSION OF POLLUTANTS FROM STATION SMOKESTACKS. Translated from Russian. C.I.T.E.P.A. Documentary Information Report No. 20, CI 207, (No Date) (Supplement).

A method was developed for calculating the dispersion of pollutants in the atmosphere. The method considers that pollutants emitted by smoke stacks are mixed with air and then transported together with air. The method is based on the turbulence theory and uses the vertical component of the turbulence exchange coefficient and its variation with altitude. Also the temperature distribution, settling rate of the pollutants, and parameters of the smoke stack are considered. The method can also be used to calculate, for a given wind velocity and meterological situation, the maximum concentration of light and heavy pollutants. Corrections are applied in case of temperature inversion and terrain irregularities. The distance from the source at which the pollutant concentration is maximum was found to be proportional to the height of the smoke stack. The calculated results are in good agreement with experimental data.

C-10937

Gräfe, K. and C. Schlunk
MEASUREMENT OF GLOBAL RADIATION AS A CONTRIBUTION TO THE AIR POLLUTION PROBLEM. [Glovalstrahlmessungen als Beitrag zu lufthygienischen Problemen.] Translated from German. Gesundh. Ing. (Munich), 86(2):54-60, 1965. 13 refs.

"Global" radiation is the combined radiation impinging on the earth's surface directly from the sun and diffusely from the sky. In global radiation measurements in the Hamburg area considerable differences in radiation were observed between the stations on individual days. On the average the urban and industrial district showed reductions in radiation as compared to the immediate vicinity of Hamburg, the level of which differed between summer and winter and with varying weather conditions. These reductions in global radiation are attributed to urban and industrial air pollution and make possible an indirect check on the pollution of the air. In the interpretation of the statistical data the complicated interaction of air pollution and meteorological parameters is taken into account. In conclusion attention is called to the economic aspects of the air pollution situation.

C-11420

Blokker, P. C.
AIR POLLUTION. III. DISPERSION OF FLUE GASES FROM STACKS. [Dispersie van rookgassen uit schoorstenen.] Translated from Dutch. Ingenieur, 80(10): G25-G32, March 8, 1968. 20 refs.

A method for calculating dispersion, plume rise, and maximum ground level concentration of a gas issuing from a stack is given. The method is confined to hot gases and gas quantities in the range of 15 to 100 nm^3 per s. Of the dispersion equations considered, that due to Sutton was chosen. Values for the vertical and horizontal dispersion parameters as a function of atmospheric stability are suggested, and the effect of sampling time is discussed. Multiple regression calculations were made for all published data on plume rise. The best agreement was found with an equation in which the plume rise was proportional to the three-quarter power of the wind speed. This means plume rise was inserted in Sutton's dispersion equation. The necessary stack height is obtained from the resulting equation for the maximum ground-level concentration. With a view to very unfavorable atmospheric conditions, it is suggested that this concentration be multiplied by a factor of 1.6, or the stack height by 2. However, it is possible that in practice lower factors could be justified, because the impression from publications is that the concentration given by this factor of 1.6 is seldom reached and then only under special circumstances. Remarks are given on the calculation of maximum ground level concentrations from a complex of stacks.

C-11644

Dronia, Horst
THE INFLUENCE OF CITIES ON THE WORLDWIDE TEMPERATURE TREND. [Der Stadteinfluss auf den weltweiten Temperaturtrend.] Translated from German. Meteorologische Abhandlungen, 74(4):1-65, 1967. 34 refs.

An attempt has been made to exclude the warning influence of growing cities from the consideration of long period temperature trends of large areas of the world. One method used for such calculations was the comparison between rural (non-influenced) and city series for a possibly long time by computing the single temperature differences of these two types of weather stations. Sixty-seven of such pairs, spread over the world, gave the results of +0.24° C average city influence for the forty year period 1901 - 10 to 1941 - 1950. In another method of calculation, dividing the global temperature trend into two individual series, comprising stations situated in cities and in open country, the temperature trend of the curve representing the cities is warmer to the same degree as it was calculated for the mean effect resulting from the growth of cities. Thirdly, a computation of worldwide temperature trends since 1871-80 using only non-influenced (rural) stations and some reduced city stations gives a temperature curve confirming previous calculations. Accordingly, the temperature, after a short rise, has fallen about 0.2° C since 1871-80. This amount is 0.4° C below the present value generally accepted as valid. Thus, the worldwide warming trend finally diminishes to a short episode of two or three decades and a value not higher than +0.25° C, and the present temperature is the same as eighty years ago. (Author's summary, modified)

D-2681

Lahmann, Erdwin
METHODS FOR MEASURING GASEOUS AIR-POLLUTANTS. [Methoden der Messung gasförmiger Luftverunreinigungen.] Translated from German. STAUB, 25(9):346-351, Sept. 1965. 68 refs.

As the analysis of air pollutants has become a very extensive area of micro-chemistry, the statements included herein are limited to the principles involved in the analysis of the most important extraneous gases. Empirical, batch, and continuous methods are the basic means for investigating gaseous air pollutants. The advantages and disadvantages of these methods are presented. Subsequently, the most important methods used at present for determination of sulfur dioxide, nitrogen dioxide, hydrogen sulfide, fluorides, oxidants, carbon monoxide, and hydrocarbons are discussed.

D-2952

Straubel, M.
A CONTRIBUTION TO THE MEASUREMENT AND EVALUATION OF THE CO CONTENT OF AUTOMOBILE EXHAUST GASES. Translated from German. Automobiltechnische Zeit, 67(4):115-119, April 1965. 3 refs.

The carbon monoxide and oxygen content of the exhaust gas while idling was determined for a number of passenger cars with Otto motors. From the results, indications are obtained as to the development of devices for taking test samples and as to the necessity of a multicomponent measurement. Absolute and specific indexes are given for evaluation of the CO expelled which are more appropriate than the usual indication in percentages by volume. (Author's abstract)

D-2954

Turkin, Y. I. and P. F. Svistov
DETERMINATION OF SOLUBLE IMPURITIES IN ATMOSPHERIC AIR. Translated from Russian. Trudy Glavnoy Geofizicheskoy Observatorii, Vol. 154, p. 99-104, 1964.

A portable apparatus is proposed for the sampling of atmospheric aerosols under field conditions. Determination of the content of soluble impurities in the samples is accomplished by the spectral method. The relatively poor study of the chemical composition of gaseous microcomponents and aerosols of atmospheric air can be attributed for the most part to the absence of satisfactory analytical methods. Solution of this type of problem makes it possible to obtain additional information on the influence of the chemical composition of the atmosphere on meteorological processes and also to clarify the principal problems involved in the sanitary-hygiene state of the atmosphere and its corrosive activity.

D-3044

Mönig, F. J., K. H. Rohe and U. Pfeiffer
IMPULSE CONVERTER TO ADAPT SCATTERED LIGHT PARTICLE COUNTERS TO MULTIPLE CHANNEL ANALYZERS. [Impuls-Konverter zur Anpassung von Streulicht-Teilchenzählern an Mehrkanal-Analysatoren.] Translated from German. Aerosol Forschung, 13(2):157-165, June 1966.

An impulse converter is described which makes it possible to feed the electric impulses emanating from a scattered-light particle-counter into a multiple-channel analyzer. This instrument enables one to get the spectrum of the particle sizes of any desired aerosol in the shortest amount of time. A schematic diagram of the instrument is given together with explicit statements of important features. The output from the multiple-channel analyzer can be fed into a printer or an X-Y plotter. The instrument makes it possible to gain insights even into the rapidly proceeding dynamics of aerosol processes.

D-3218

Krizek, Josef
DETERMINATION OF NITROGEN OXIDES IN SMALL CONCENTRATIONS. [Stanoveni nizkych koncentraci kyslicniku dusiku.] Translated from Czech. Chemicky Prumysl, 16(9):558-559, 1966.

The polarographic and colorimetric methods for determining nitrogen oxides are revised. He finds that improper composition of the absorption solution is responsible for the biased (systematically lower) experimental results; potassium nitrite, formed if the gas is absorbed in 0.1N KOH solution containing H_2O_2, decomposes in acid medium during further operations. He therefore recommends using the H_2O_2 solution for absorption with subsequent alkalization before the sample is boiled down. The applicability and suitability of methods for determining NO_2 which utilize the formation of azo dyes are discussed.

D-4018

Stratmann, H., M. Buck, H. Gies, L. Warschun, and E. Marenbach
THE MEASUREMENT OF NITROGEN DIOXIDE IN THE ATMOSPHERE. [Messung von Stickstoffdioxid in der Atmosphäre.] Translated from German. Research Report II/15, Landesanstalt für Immissions - und Bodennutzungsschutz des Landes Nordrhein-Westfalen, Essen, Germany. 19p. 13 refs.

Up to the present time there has been no standard process for determining nitrogen dioxide in the atmosphere. The Saltzman process is suitable both for discontinuous and continuous recording measurements, according to international experience to date. The chemical reaction mechanism which forms the basis of this process is, however, still so obscure that different interpretations and calculations of the research findings are made. The behavior of gaseous nitrogen dioxide towards reaction solution in comparison with the calibration of the process with sodium nitrate was investigated. It was found that, contrary to the classical conceptions, 0.5 M of sodium nitrate are not equivalent to 1 M of NO_2, nor, contrary to Saltzman's view, are 0.72 M, but 1 M of NO_2 corresponds to 1 M of NO_2 ions from sodium nitrate. The calibration factor for a calibration function established with sodium nitrite thus has no value different from 1, contrary to previous conceptions. After calculation of the limit of detection and the reproducibility, the disturbing influences of foreign substances were investigated, with special attention to the behavior of NO-NO_2 mixtures.

Discontinuous NO_2 emission measurements can now be carried out at intervals of 10 minutes using a special sampling vessel with an air flow rate of 60 lit/hr. (Authors' abstract, modified)

D-4209

MEASUREMENT OF ATMOSPHERIC POLLUTION. PARTS 4 AND 5. DETERMINATION OF SULFUR DIOXIDE. [Metodi di misura dell'inquinamento atmosferico. Quarta e quinta parte. Misura dell'anidride solforosa.] Translated from Italian. Fumi & Polveri, 6(12):331-332, Dec. 1966. 3 refs.

It was found that SO_2 is not usually present in the atmosphere in the free state but in the form of sulfuric acid and sulfates resulting from the reaction of SO_2 with water and ammonia present in the air. The atmosphere in each of the cities studied (London and Paris) contained sulfuric acid, but this represented only a small part of the total sulfate in suspension. The concentration of the free or mixed acid was determined by collecting samples on Whatman No. 1 filter paper. One filter paper was used for two determinations: half to determine the H_2SO_4 content by pH titration and half with cyanin chromate to determine the total sulfate content. Conductometric and colorimetric methods were also used. To measure the conductivity, samples collected on filter paper were immersed in a KCl solution of known normality, and the SO_2 content was calculated from the conductivity measurements.

D-4210

METHODS OF MEASURING AIR POLLUTION. MEASUREMENT OF HYDROCARBONS. (Part 5.) [Misura deli Idrocarburi (Parte 5.)] Translated from Italian. Fumi Polveri (Milan), 6(12):333-336, Dec. 1966.

Polycyclic hydrocarbons, present in the air an an integral part of the material in suspension, and volatile hydrocarbons present in the gaseous state, were investigated as pollutants. Polycyclic hydrocarbons can cause cancer. Work on the "anthracene index" and the "method of quinine sulfate" made it possible to define a simple index of the tar material, whether this index could or could not be related to the concentration of individual polycyclic hydrocarbons. Good results for determining the smoke content of tars are possible if contamination by other pollutants, such as lubricating oil, is avoided. The quinine sulfate method can be correlated with the daily measurements of smoke/SO_2 being carried out in various locations. Volatile hydrocarbon pollutants are becoming more prevalent in large cities due to automotive emissions. The principle of the index of the quinine sulfate method is described using flurometric measurements on the sample and on a reference.

D-4902

Peterson, Folke
MEASUREMENT OF AIRBORNE DUST. [Mätning av luftburet stoft.] Translated from Swedish. Technical Conference and Advanced Training Institute (TKF), No. 2, p. 33-36, June 1964.

This paper summarizes various methods of measuring airborne dusts. The measurement of dust in flue gases is usually limited to determination of the amount of dust per cubic meter of gas. Using the Bacharach scale, measurement is made with a simple pump which is used to suck the flue gas through a filter paper, the degree of blackness being a measure of dust content. Ringelmann cards are also used in determining the relative darkness of smokes, whereby an observer compares differently shaded cards with smoke. Optical smoke detectors can be used to measure dust by light beam diffusion in flue gases, and filters can be used to measure dust directly in weight units. Other types of apparatus for measuring airborne dusts include konimeters, electrostatic precipitators, thermal precipitators, tyndallometers and impingers. In the measurement of dust fallout, two types of samplers can be used. One utilizes collection devices in the form of vessels, and the other utilizes adhesive surfaces. Various methods applied to the measurement of particle size distribution are enumerated and include: microscopic measurements and statistical analyses; tape projection where soot flakes are collected on a tape and projected in appropriate apparatus; sedimentation; centrifuging; and screening.

D-5381

Kolomiets, G. K.
AN APPARATUS FOR DETERMINING THE CONCENTRATION AND SIZE DISTRIBUTION OF NATURAL AEROSOL PARTICLES IN THE SURFACE LAYER OF THE ATMOSPHERE. Translated from Russian. Bull. Astrophys. Inst., Vol. 11, p. 111-114, 1960. 6 refs.

In order to study particles which are smaller than 1 micron in radius, ultramicroscopy is used. In the ultramicroscope, particles are viewed in the suspended state, with strong side illumination, against a dark background. For particles which fall with a constant velocity, the time of the fall is measured with a stop watch and the equivalent spherical particle size is determined by the Stokes formula. The results of measurements of particle size distribution and concentration of solid particles and fog are presented.

D-5383

Krilov, N. A.
DETERMINATION OF ETHYLENE OXIDE IN THE ATMOSPHERE. Translated from Russian. Gigiena i Sanit., 26(10):48, Oct. 1961. 1 ref.

A colorimetric method was developed for the estimation of ethylene oxide in the atmosphere, based on the hydration of ethylene oxide to the ethylene glycol and its subsequent oxidation by periodic acid or potassium periodate to formaldehyde and the determination of the latter with chromotrophic acid. The sensitivity of the method is 0.000 5 mg. in 5 ml. It is recommended that ethylene oxide be sampled in 6 ml. of 40 percent H_2SO_4 contained in a U-shaped absorber with a No. 1 porous membrane at a speed of 0.5 l/min.

D-7692

Ixfeld, H. and M. Buck
A METHOD FOR DETERMINING THE TOTAL AMOUNT OF COMBUSTIBLE ORGANIC SUBSTANCES IN WASTE GASES. [Eine Methode zur Bestimmung der Gesamtmenge verbrennbarer organischer Substanzen in Abgasen.] Translated from German. Brennstoff-Chem. (Essen), 47(3): 79-83, March 1966. 2 refs.

The gas sample is passed through a small tube filled with silica gel on which organic compounds from the gas are absorbed, with the exception of CO_2. These compounds are then desorbed by heating and oxidizing on platinum wool. In order to remove sulfur oxides and halogen compounds which are also absorbed, the gas is passed through silver wool which by chemo-sorption eliminates these compounds. Subsequently, the gas passes through a gas washing bottle with $Ba(OH)_2$ solution where the CO_2 formed by combustion is absorbed. Its amount is determined by titration with oxalic acid. The applicable range of concentrations suitable for this method is 20 to 400 mg C/Nm^3, with 3 percent relative standard deviation. The laboratory procedure is described in detail, and calibration values are listed. The results of tests on 17 substances are also reported.

D-7700

Scassellati Sforzolini, Giuseppina, Francesco Pascasio, Eugenio Marchesotti, and Mario Novella Chiucchiu
CHROMATOGRAPHY ON LONG ALUMINA COLUMNS AND SPECTROPHOTOMETRY OF POLYCYCLIC AROMATIC HYDROCARBONS. [Cromatografia su Lunga Colonna di Allumina e Spettrofotometria di Idrocarburi Aromatici Policiclici.] Translated from Italian. Ann. Ist. Super. Sanita (Rome), 3(1):45-49, 1967. 36 refs.

Spectrophotometric analysis of 15 pure polycyclic aromatic hydrocarbons most frequently found in cigarette smoke were studied. The spectra obtained were used for both qualitative detection and quantitative analysis of the hydrocarbons. The characteristic maximum wavelength of each and its respective standard optical height are given in tables. Several mixtures of the same pure hydrocarbons were studied by spectrophotometric analysis to determine the qualitative and quantitative interference of each upon the others. Chromatographic separation using a long alumina column was used on the mixture of the 15 pure hydrocarbons and this was followed by spectrophotometric measurement of the eluates obtained. A fairly good separation of the various constituents was obtained. Most were identified and measured with remarkable accuracy.

D-7832

Wachler, G.
THE DETERMINATION OF CADMIUM IN AIR. [Ueber die Bestimmung von Kadmium in der Raumluft.] Translated from German. Z. Ges. Hyg., 12(8):674-681, 1966. 27 refs.

In the East German electrochemical industry it has become necessary to develop a method for the analysis of cadmium in air. Dusts and aerosols containing Cd are collected on glass wool in a glass tube. At 500 liter of air per hour the collecting time is one hour. Subsequently the glass wool is boiled in nitric acid and the Cd concentration is determined photometrically by the dithiozone method. This method was chosen because it is insensitive to zinc and nickel. A detailed discussion is presented of analysis of error. The lower threshold is 13 μg Cd at the 99 percent level; the standard deviation is 19 percent.

D-8468

Wickert, Kurt
SO_3 DETERMINATION IN DUST-LADEN AND DUST-FREE COMBUSTION GASES. [SO_3-Bestimmung in staubhaltigen und staubfreien Verbrennungsgasen.] Translated from German. Erdoel Kohle (Hamburg), 20(8): 568-572, Aug. 1967.

An analytical method is described which allows an exact determination of the SO_3 content of dust-free as well as dust-laden combustion gases. The apparatus for dust-free analysis is illustrated and two tables are given showing the analytical data obtained with the catalytic temperature at 450 and 550° C, respectively, and an asbestos layer at 75° C. A third table shows the gas temperatures at different catalytic temperatures and gas flow velocities The condensation tube of the apparatus should contain at least 4-5 gm of asbestos in a 4-cm-long layer and the catalytic temperature should be high if correct SO_3 values are to be obtained. For SO_3 determination in dust-laden combustion gases a modified apparatus is illustrated. The dust in the gas reacts with the SO_3 (or the sulfuric acid) and if this dust reaction is disregarded the result of the analysis becomes incorrect, the error increasing with increasing amounts of reactivity of dust. In the analytical method described, this dust reaction is taken into account and the SO_3 (vol. %) in dust-free gas, dust-laden gas, and fuel gas is tabulated. It is further shown that analytical difficulties result if calcium oxide is present in the dust. The conditions under which SO_2 reacts with dust to produce sulphate are indicated.

D-8630

Bardodej, Z.
VALUE AND USE OF EXPOSURE TESTS. VI. CARBONYLHEMOGLOBINEMIA AND CARBON MONOXIDE IN EXHALED AIR. [Hodnota a pouziti expozicnich testu. VI. Karbonylhemoglobinemie a kyslicnik uhelnaty ve vydechovanem vzduchu.] Translated from Czech. Ceskoslovenska Hygiena, 8(2):108-112, 1963. 30 refs.

A study was made of the course of saturation of the blood coloring matter by carbon monoxide at various degrees of lung ventilation and desaturation both during inhalation of uncontaminated air as well as during inhalation of pure oxygen or oxygen with an admixture of carbon dioxide. Since it is not desirable to take blood samples in the field and delays resulting from the transfer of the blood sample from the workplace to the doctor's office always result in a decrease of the level of COHb in blood (and it is difficult to estimate the decrease), an effort has been made to study the possibility of analyzing exhaled or alveolar air both to evaluate the exposure of persons who have been exposed chronically as well as for purposes of diagnostics and to study the course of intoxication by carbon monoxide. This was made possible by the introduction of infra-analyzers which make it possible to determine quickly and accurately the content of carbon monoxide, and by introducing tube indicator which is so simple to operate that anybody can do it. It was determined by computations that 1 ppm of carbon monoxide in exhaled air corresponds to 0. 3 percent COHb in blood within the concentration range encountered in industry.

D-8964

Terabe, Motoji, Sadao Oomichi, and Masanobu Nagata
RESEARCH ON MEASUREMENT OF FLOATING DUST BY HIGH-VOLUME SAMPLER. REPORT NO. 2. Translated from Japanese. Kuki Seijo [J. Japan. Air Cleaning Assoc.] (Tokyo), 5(2):34-40, July 1967.

Comparison tests were made in order to: (1) verify measurements by Hi-Vol samplers manufactured by two different firms; (2) determine differences in results when the two different Hi-Vol samplers were used; and (3) compare differences between the same tests made in the U. S. A. by the Field Studies Branch (FSB), Division of Air Pollution, U. S. Public Health Service and in Japan by the Kawasaki Municipal Hygienic Laboratory (KHL), Kawasaki, Japan. Methodology was previously reported. The average value of floating dust obtained with 20 samplings from March to May was 324 gm/m^3 for one sampler and 274 gm/m^3 for the other. The ratio of these values was 1. 19 which is close to the results for the first experiment (1. 18). The results of dust analyses by FSB and KHL were very similar.

D-9012

Vyskocil, Jiri, Bohumir Chalupa, and Ivan Berka
RECENT ADVANCES IN EVALUATION OF WORKMEN'S EXPOSURE TO CARBON MONOXIDE. [Nove poznatky v hodnoceni vystaveni pracujicich kyslicniku uhelnatemv.] Translated from Czech. Vnitrni Lekarstvi, 10(3):230-237, March 1964. 33 refs.

Of all presently known methods, the biochemical determination of blood COHb (carboxyhemoglobin) is the most specific indicator of exposure to CO. The carboxyhemoglobin level shows a fairly close relationship with the CO concentration in the air at the workplace, but the relationship between the signs of poisoning and the COHb level is not pronounced and varies with individuals. Still undecided is the question of how to determine exposure to low CO concentrations that play a role in chronic poisoning. New information is described concerning the clinical picture of acute poisoning, particularly the changes in the CNS that manifest themselves as memory disturbances and disorders in neurohumoral control. It is much more difficult to diagnose chronic CO poisoning. Although signs of CNS and neurohumoral impairment after fairly long-term exposure to low CO concentrations were more frequent in entire groups of exposed workmen than among normal persons, they were not specific enough to detect chronic poisoning individual cases. In future research on CO poisoning we must concentrate our attention primarily on a final solution to the problem of chronic poisoning, and on determining the specific toxic effects other than the anoxemic effect of the combination of CO with the hemoglobin. (Authors' summary)

D-9015

Pedrero, Pablo Sanz and Pedro Ramos Rodrigo
THE TOXICOLOGY OF CARBON MONOXIDE WITH TECHNIQUES TO DETERMINE IT. A NEW POLAROGRAPHIC METHOD TO EVALUATE IT IN THE BLOOD AND IN THE ATMOSPHERE. [La toxicologia del oxido de carbono con las tecnicas para su determinacion. Un nuevo metodo polarografico para la evaluacion en sangre y en el ambiente.] Translated from Spanish. Anales de la Rela Academia de Farmacia, 30(4):228-259, Sept. 1964. 106 refs.

An improved polarographic method for the determination of carbon monoxide both in the blood and in contaminated atmospheres has been investigated. The development of techniques for each of the two measurements are fully described. Both techniques utilize the reaction of the contaminated sample with palladium chloride which produces palladium. The reduced palladium is determined by polarography. Results show that both measurement methods are simple and rapid. The atmospheric measurement technique is accurate within the permissible limits set by the First and Second International Symposium on Maximum Tolerable Concentrations of Toxic Substances in Industry.

D-9037

Switzerland. Commission for Air Hygiene
QUANTITATIVE METHODS FOR MEASURING THE EMISSION OF SULFUR DIOXIDE WITHIN THE LIMITS RECOMMENDED BY THE SWISS COMMISSION FOR AIR HYGIENE. Translated from German. In: Surveillance of the Sulfur Dioxide Content of the Atmosphere. Bull. Eidgenoess. Gesundh., Beilage B, No. 4, p. 5-10, 1966.

In this "directive" the requirements are listed for methods used to determine SO$_2$ emission within the limits recommended by EKL, the Swiss Commission for Air Hygiene. Sulfur dioxide methods in use today were deliberately ignored in order to avoid setting standards These requirements serve as guidelines for methods that must be applicable for settling disputes, damage claims, etc. Quantitative measurement of SO$_2$ emission, in order to stay within the recommended limits, must conform to requirements 1 and 2 of section I of this directive. During quantitative determinations, requirements 3-6 of the same section must be satisfied. Section II contains advice on purely informative examinations. Section III deals with systematic methods for measuring SO$_2$ emissions.

D-9038

Hoegger, D.
DETERMINATION AND EVALUATION OF THE CONTENT OF SULFUR DIOXIDE IN THE ATMOSPHERE. Translated from German. In: Surveillance of the Sulfur Dioxide Content of the Atmosphere. Bull. Eidgenoess. Gesundh., Beilage B, No. 4, p. 21-47, 1966. 13 refs.

If health hazards are to be kept to a minimum, values of SO$_2$ concentration in the atmosphere should not exceed the limits which are proposed. Investigations in Switzerland and abroad indicated that in large cities these recommended limit values are often reached or surpassed during the winter. Surveillance of SO_2 content in villages and towns during winter and spring is desirable. Yearly surveillance is desired in areas near industrial SO_2 emitters. Basic principles are described which pertain to such determinations and some methods are described which have been used to a large extent in Switzerland and which proved to be of value. This paper provides a practical tool for rational planning.

D-10204

Heinl, E.
ANALYSIS OF CHILD GROUP CASE HISTORIES FOR ASSESSING AIR POLLUTION. [Analyza anamnezy detskych kolektivu pri hodnoceni vlivu znecisteneho ovzdusi.] Translated from Czech. Ceskoslovenska Hygiena, 11(9):531-538, 1966. 9 refs.

Most methods of assessing and documenting the harmful effects of air pollution in large communities are based on the evaluation of specific indices obtained by examining the state of health of groups of children. This study was based on the analysis of anamnestic data on 85 children age 8 to 9 years near an industrial emission source in Neratovice and a control group of 50 from an "air-pollution" free town. The several factors simultaneously affecting state of health are elucidated using the multiple and partial correlation methods. The results indicate basic differences between the average incidence of certain respiratory diseases in the groups examined. Data from 1962 and 1963 indicate that the part played by pollution from industrial gas discharge is the most important factor in the relationship between the occurrence of bronchitis and various external factors. A detailed discussion is given of the method of computation and the principles of evaluating results.

D-10785

Cier
DETECTION AND MEASUREMENT OF CARBON MONOXIDE. [La detection et le dosage de l'oxyde de carbone.] Translated from French. Rev. Corps Santé Mil. (Paris), Vol. 14, p. 338-352, Sept. 1958. 52 refs.

Chemical methods used to detect CO are reviewed. The methods are based on oxidation, on the oxidation of CO by I_2O_5, on the oxidation of CO by metallic salts, and on the formation of complexes. Physical methods used to detect CO are also reviewed. With all these techniques available, there is no single one which is satisfactory in all circumstances.

D-10795

Del Vecchio, V.
DETERMINATION OF CARBON MONOXIDE IN THE AIR. [Determinazione dell'ossido di carbonio nell'aria.] Translated from Italian. Minerva Med. (Turin), Vol. 49, p. 1028-1048, March 21, 1958. 19 refs.

Carbon monoxide is discussed with emphasis on nomenclature, physiochemical properties, toxicity, tolerable concentrations, and methods of measuring its concentration in the air. Some of the semi-analytical methods of measurement in the air are listed and discussed in detail. They fall into the 3 main groupings of: titrimetric, using pentose oxide; photometric, using palladium chloride; and a method measuring the level of carboxyhemoglobin, or COHb, in the blood. Some of the continuous or semi-continuous measuring methods are also discussed. Many schematic drawings and photographs of the testing equipment are included in the text, together with (1) graphs showing the toxicity of CO as a function of concentration and of the period of time of exposure; (2) the rate of saturation of hemoglobin with various concentrations of CO in the air; and (3) the percentage of carboxyhemoglobin in the blood correlated with percentage of CO in the air, the period of exposure, and the activity of the subject.

D-10799

Ciuhandu, Gheorghe
PHOTOMETRIC DETERMINATION OF CO IN THE ATMOSPHERE. [Photometrische Bestimmung von Kohlenmonoxyd in der Luft.] Translated from German. Anal. Chem. (Berlin), Vol. 155, p. 321-327, 1957. 6 refs.

A photometric method is described for the determination of CO which is based on the absorption of the gas in an alkaline solution of the silver compound of p-sulfamino benzoic acid. The silver compound is reduced to metallic silver which remains in colloidal suspension. The extinction of this silver sol is measured. Under the experimental conditions described, the extinction is proportional to CO levels in the range of 0.001-0.5 percent CO. At wave lengths below 500 mμ, extinction increases rapidly. For this reason, it is useful to carry out measurements at short wavelengths. For example, sensitivity with a Zeiss filter S42 is almost twice that for S50. Exact directions for the determination of CO are furnished.

D-10814

Prochazka, Rudolf
THE LATEST DEVELOPMENT OF THE KONITEST DUST MEASURING INSTALLATION OPERATING ON AN ELECTROSTATIC FRICTION BASIS. Translated from German. STAUB (Düsseldorf), 24(9):353-359, Sept. 1964. 9 refs.

Preliminary results with the Konitest apparatus for continuously recording dust levels in industrial working places are reported. Experiments with aerosol generators are described which indicate the sensitivity of the measuring apparatus to fine, solid aerosols. An indication is given of the possibility of recording dust levels accessible to the lungs in working places with a silicosis hazard by continuous separation of the coarser particle components using a collecting cyclone and the Konitest apparatus. The apparatus performs very accurately inside industrial working areas. Lowest level of sensitivity was 1 $\gamma/in.^3$. It fulfills requirements laid down for dust recorders inside workshops.

D-10815

Schmidt, Karl Georg
INVESTIGATIONS ON THE FINE PARTICLE DEPOSITS IN THE PRECOLLECTOR OF THE HEXHLET APPARATUS. [Untersuchungen ueber den Feinkornniederschlag im Vorabscheider des Hexhlet Geraetes.] Translated from German. STAUB (Düsseldorf), 24(8): 338-341, Aug. 1964. 4 refs.

A Hexhlet apparatus for the gravimetric determination of dust levels is described. Problems with corrosion of the intake head are mentioned and led to the installation of a precollector made of stainless steel. Theoretical particle size distribution curves are derived as a function of dust fractions of varying diameters.

D-10816

Coenen, Wilfried
DUST MEASUREMENT AND RECORDING BY THE METHOD OF SMALL ION ACCUMULATION. [Registrierende Staubmessung nach der Methode der Kleinionenanlagerung.] Translated from German. STAUB (Düsseldorf), 24(9): 350-353, Sept. 1964. 9 refs.

A commercially available apparatus for dust measurement is described mathematically. The described instrument, which measures ionization levels of the dust, is found suitable in principle for dust measurement. This instrument will measure practically the whole range of suspended particulate matter. The effects of air temperature and air pressure upon ionization are expressed mathematically. When used in conjunction with a gravimetric measuring instrument, this instrument may be able to determine the mean radius of an unknown particle size distribution.

D-10817

Schutz, Alfred
AN ARRANGEMENT FOR CONTINUOUS RECORDING OF DUST MEASUREMENTS BY THE CONTACT-ELECTRIFICATION METHOD. [Eine Anordnung zur registrierenden kontaktelektrischen Staubmessung.] Translated from German. STAUB (Düsseldorf), 24(9): 359-363, Sept. 1964. 12 refs.

The structure and operation of a contact-electrification dust measuring recorder is described. Using three types of quartz dust, tests are made to provide calibration curves of known dust levels. Discrepancies in the results are attributed to the impact of the particles on the electrical recording wire.

D-10818

Neuwirth, Robert
DUST-MEASURING EXPERIENCE WITH RECORDING INSTRUMENTS IN THE STUDY OF ATMOSPHERIC CONDITIONS IN SPAS. [Erfahrungen mit registrierenden Staubmessgeraeten im Rahmen der Kurortklimaforschung.] Translated from German. STAUB (Düsseldorf), 24(9): 364-366, Sept. 1964. 11 refs.

Comparative measurements were taken of aerosols by the Biometeorology Department of the Freiburg Office of Meteorology, using Effenberger's avigraph and an air sampler used in America. A difference is noted in dust loads for lowlands and mountains. Comparison of the two pieces of apparatus finds the photometer more objective than the avigraph, the pump output (0.43 m^3/sec) of the air sampler low, and the nozzle on the avigraph easily clogged. The values obtained by both measuring procedures are comparable. The air sampler requires use of filter paper with very uniform thickness.

D-10819

Rzeznik, Jerry
THE TYNDALLOGRAPH, A PHOTOELECTRIC DUST-MEASURING INSTRUMENT. [Der Tyndallograph, ein optisches Staubmessgeraet mit elektrischer Anzeige.] Translated from German. STAUB (Düsseldorf), 24(9): 366-368, Sept. 1964. 1 ref.

A tyndallograph for dust measurement is described. This new optical apparatus is discussed and compared with others. It features a high efficiency of the servo feedback mechanism, elimination of the temperature dependence, insensitivity toward oscillations in the supply voltages, and automatic adjustment of the noise to the measuring speed. It was designed for routine measuring of dust levels in the coal mining industry.

D-10820

Baum, Fritz and Fritz Riess
AN AUTOMATIC DUST SAMPLER BASED ON THE MEMBRANE FILTER PRINCIPLE. [Automatischer Staubprobensammler auf Membranfilter-Basis.] Translated from German. STAUB (Düsseldorf), 24(9): 369-370, Sept. 1964.

A novel, automatic dust sampler, based on the membrane filter principle, is described which is suitable for continuous checking of dust levels. A series of filters are rotated in turn in the path of the air intake. Measurement of air in a car-parking tunnel in Stuttgart leads to the conclusion that maximum dust levels are found at night (due to increased traffic after ventilation is shut off for the night).

D-10821

Avy, Alban P. and Michael Benario
ACOUSTIC DETECTION OF DUST PARTICLES. [Akustischer Nachweis von Staubteilchen.] Translated from German. STAUB (Düsseldorf), 24(9): 343-344, Sept. 1964. 8 refs.

First, an experimental apparatus is described for the detection of small particles (1-30 μ in diameter), using a telephone received with a thin brass plate attachment. The microphone is placed in a vacuum chamber to accelerate the particles and to protect the microphone against outside noises. Secondly, the results of calibration of a cascade impactor are summarized for polydispersed and monodispersed aerosols.

D-10822

Hartogensis, Freddy
RECORDING DUST-MEASURING INSTRUMENTS. [Registrierende Staubmessgeraete.] Translated from German. STAUB (Düsseldorf), 24(9):344, Sept. 1964.

A short communication is given on two experimental recording dust-measuring instruments which have withstood tests under operational conditions: a tyndallometer and an American smoke sampler. Both instruments have the disadvantage of showing only one measurement; particle size and dust color affect the values obtained.

D-10824

Walter, Erwin
POTENTIALITIES AND LIMITS FOR THE OPTICAL RECORDING MEASUREMENT OF LOW DUST CONCENTRATIONS. [Möglichkeiten und Grenzen für eine optische registrierende Messung von kleinen Staubkonzentrationen.] Translated from German. STAUB (Düsseldorf), 24(9):348-350, Sept. 1964. 8 refs.

Performance of an optical measurement system for dust or smoke is limited by contamination of optical lenses by dust or condensate, differences in temperature of moisture near the light transmitter or receiver, and by the instability of the dust-laden air being monitored. Corrections of these conditions are discussed, leading to the design of a prototype apparatus. This apparatus is described. Photoelectric procedures are considered suitable for recording fine dust levels of a few mg/m^3.

D-10825

Hartogensis, Freddy
PARTICLE COUNTING. [Teilchenzählung.] Translated from German. STAUB (Düsseldorf), 24(8):282-283, Aug. 1964. 6 refs.

The problem of counting small particles is discussed, with examples from several countries. A well-defined counting method may be preferred, but it would be preferable to have a standardized method which will, under specified conditions, reliably count all detectable particles. Methods should be selected for routine measurements on the basis of the best possible correlation between results and the hazard of sickness caused by the dust. A final choice is hardly possible as long as there is no clear indication of which results of dust monitoring are the best indicators of health hazards.

D-10827

Bauer, Hans-Dieter
THE USE OF MEMBRANE FILTERS FOR DUST MONITORING. [Die Verwendung von Membranfiltern bei Staubmessungen.] Translated from German. STAUB (Düsseldorf), 24(8):290-292, Aug. 1964. 5 refs.

Membrane filters are used instead of a konimeter because they permit firmer deposition of dusts. Differently colored membrane filters are discussed and analyzed; their performance is compared with that of micropore filters. The results obtained with two different aspirators are in good agreement, regardless of whether green filters or white micropore filters are used.

D-10828

Walkenhorst, Wilhelm
INVESTIGATIONS INTO THE RELATIONSHIP BETWEEN PARTICLE SHAPE AND THE RATE OF SEDIMENTATION OF DUST PARTICLES. [Untersuchungen über den Zusammenhang zwischen Kornform und Sedimentationsgeschwindigkeit.] Translated from German. STAUB (Düsseldorf), 24(8):305-309, Aug. 1964. 5 refs.

An apparatus for the determination of particle sedimentation rate is described where the particles are sorted in a tube according to their velocities. The operation of the apparatus, using small particles of India ink, is described. Using a microscope, the size distribution of the dusts according to falling velocities can be determined; once this distribution is determined, then the apparatus can be calibrated for the relation between Stokes' diameter and sedimentation distance. Tests with glass, quartz, and talcum particules were used to demonstrate reliability.

D-10831

Gessner, Hermann
EXPERIENCE OF PRACTICAL DUST MONITORING. [Erfahrungen aus der Praxis der Staubmessung.] Translated from German. STAUB (Düsseldorf), 24(8):314-316, Aug. 1964. 13 refs.

The methods used for dust monitoring are discussed. Particle counting is considered inferior to other methods except in the case of low dust levels. Determination of particle numbers, gravimetric analysis, determination of particle size distribution and measurement of dust deposition are reviewed.

D-10832

Davies, C. N.
THE DEPOSITION AND RETENTION OF DUST IN THE RESPIRATORY TRACT OF MAN. [Deposition und Retention von Staub in den menschlichen Atemwegen.] Translated from German. STAUB (Düsseldorf), 24(8):316-323, Aug. 1964. 11 refs.

The methods for determination of dust particle sizes are discussed, followed by a mathematical description of particle size distribution expected in a dust collector. These observations are then related to the behavior of inhaled aerosols and compared with previously observed results. Particles of 4 μ diameter have low rates of diffusion and sedimentation; only 22.7 percent are calculated to be deposited in the alveoli and 14.5 percent adhere to the bronchi during exhalation. Particles of 0.4 μ diameter are calculated to be 33.3 percent deposited in the alveoli. Deposition in the bronchi and bronchioles occurs with 50 percent deposition during inhalation of 5 μ diameter particles, and 50 percent deposition during exhalation of 2.12 μ diameter particles. These theoretical calculations are compared with data from reported autopsies. Retention curves are calculated. In conclusion, gravimetric dust sampling for control of silicosis hazards must be carried out with the aid of precollectors in order to eliminate larger particles from the sample.

D-10833

Hamilton, R. J.
MEASUREMENT OF RESPIRABLE DUST CONCENTRATIONS BY MASS. [Die Messung atembarer Staubkonzentrationen nach ihrer Masse.] Translated from German. STAUB (Düsseldorf), 24(8):336-337, Aug. 1964. 8 refs.

Instruments which are used in British mines to monitor dust levels are discussed, as well as the principles upon which they operate. The normal precipitator, presently used by the National Coal Board, may be replaced for routine dust monitoring by the long-term thermal precipitator. The thermal precipitator is believed to be inaccurate and the gravimetric estimation of respirable dust levels is recommended. Gravimetry is discussed. Two instruments are mentioned which fill the general requirements for gravimetric measurement.

D-10834

Breuer, Hans
EXPERIENCES WITH THE GRAVIMETRIC FINE DUST FILTER BAT. [Erfahrungen mit dem gravimetrischen Feinstaubfiltergerät BAT.] Translated from German. STAUB (Düsseldorf), 24(8):324-329, Aug. 1964. 11 refs.

Evaluation of dust samples in the coal mining region of West Germany, by means of 54 "BAT" brand fine dust filter instruments, is reported. The instruments, used for the determination of quartz in mine dusts, are equipped with a cyclone for the preliminary separation of dust particle sizes not entering the lungs. Particle size distribution measurements are described graphically, representing tests of coal, slate, and quartz dusts. Slate dusts were used for investigations on the effect of an aspirated air volume of 3-15 m^3/hr on the degree of filter transmissivity; the latter can be set at a certain value by applying a definite volume of aspirated air, thus simulating the retention of dust in the lungs. The effect of different air intakes on the concentration and particle distribution of fine dust, and the effect of total dust concentration on transmissivity, also are documented. Gravimetric and routine photometric comparison measurements were carried out in 8 different mines, using the "BAT" fine dust filter-instrument, the "Goth" total dust filter instrument, a Tyndalloscope, and a mining konimeter. Differences of the "BAT" instrument results, shown graphically, were apparent primarily in the measurement of fine dust concentrations.

D-10835

Landwehr, Martin
EXPERIENCE IN THE USE OF PRELIMINARY SEPARATORS WITH GRAVIMETRIC DUST MEASURING INSTRUMENTS FOR PARTICLES GREATER THAN 5 MICRONS. [Erfahrungen bei Verwendung von Vorabscheidern für Körnungen grösser als 5 Mikrometer bei gravimetrischen Staubmessgeräten.] Translated from German. STAUB (Düsseldorf), 24(8):329-332, Aug. 1964. 3 refs.

Experience during operation of gravimetric dust measuring instrumentation in mines is reported. Collecting instruments with preimpingers and membrane filters are described, including a Drager model of an SFI sampling instrument system. The efficiency of the dust collection of this SFI instrument is compared with collection efficiency of the Tyndalloscope. The SFI instrument satisfied all requirements of industrial and scientific dust measurement.

D-10840

Koubal, Jan and Josef Zdrazil
INDUSTRIAL ATMOSPHERE: III. DETERMINATION OF PHENOL IN THE ATMOSPHERE OF FACTORIES OF PHENOLFORMALDEHYDE RESINS. Translated from Czech. Pracovni Lekar. (Prague), Vol. 3, p. 140-150, 1951.

A method is described for the polarographic determination of phenol in the air. The values listed are obtained by checking the atmosphere of press rooms where electrotechnical products are made from Bakelite, and where automotive brake linings are manufactured.

D-10864

Stratmann, H. and M. Buck
COMPARATIVE MEASUREMENTS WITH THE SILICA GEL-METHOD AND THE TCM-METHOD FOR DETERMINING SULFUR DIOXIDE IN THE ATMOSPHERE. [Vergleichsmessungen mit dem Silikagelverfahren und dem TCM-Verfahren zur Bestimmung von Schwefeldioxyd in der Atmosphäre.] Translated from German. Intern. Air Water Pollution (London), Vol. 9, p. 199-218, 1965. 8 refs.

Comparative data are reported for the silica gel-method and the TCM-method, the two most commonly used methods for determining SO_2. The accuracy of the methods was established with a pure SO_2-air mixture. Both methods give similar results within the range of probable error. Agreement with atmospheric measurements taken in Essen was also statistically satisfactory. Reproducibility of the results, for levels between 0.05 and 1.0 mg. SO_2/m^3, ranges from 4 to 8 percent. The relative limits of detection and optimum range of measurement, based on standard conditions for both methods, also do not differ. Both methods can detect as little as 0.01 mg. SO_2/m^3. Levels greater than 0.03 mg. SO_2/m^3 are determined with a standard deviation of about 5 percent. Sampling times of 10-60 minutes can be used.

D-10876

Perrelli, G. and E. Rosettani
EVALUATING THE ENVIRONMENTAL HAZARD OF CARBON MONOXIDE. [Criteri di valutazione del rischio ambientale da CO.] Translated from Italian. Folia Med. (Naples), 47(11):1062-1067, Nov. 1964. 9 refs.

After a brief review of the various methods available for environmental CO detection (colorimetric tests, catalytic tests, infra-red tests, chemical oxidation and reduction tests, and hemoglobin absorption tests), the difficulties inherent in making adequate evaluations of actual exposure level are stressed. Direct COHb determination is a more sensitive index of actual exposure hazard.

D-10902

Sprenger, Gerhard
THE SPECTROGRAPHIC IDENTIFICATION OF NITRIC OXIDE OCCURRING IN AN INTERMEDIATE FASHION IN THE REACTION BETWEEN NITROGEN PENTOXIDE AND OZONE. [Die spektrographische Identifizierung des in der Reaktion zwischen Stickstoffpentoxyd und Ozon intermediär auftretenden Stickoxydes.] Translated from German. Elektrochem. (Weinheim), 37(8-9):674-678, 1937.

The reaction between nitric pentoxide and ozone was studied spectrographically at 20 to 40° C and NO_3 was identified as an intermediate product. The chain reaction mechanism was formulated and the calculated rate constant was found in good agreement with that obtained from kinetic data.

D-11423

Novak, Jiri V. A.
POLAROGRAPHIC-COULOMETRIC ANALYZERS FOR TRACE CONCENTRATIONS OF SO_2. [Polarograficko-coulometricke analyzatory na stopove koncentrace SO_2.] Translated from Czech. No reference, 6p. 3 refs.

A sensitive polarographic-coulometric method for the measurement of trace concentrations of SO_2 in the atmosphere has been worked out and on its principle a continuous analyzer has been constructed, characterized by simplicity, portability, and operational dependability. The method is based on a continuous coulometric measurement of the concentration of iodine ions, which form in the course of the known reaction between SO_2 and elementary iodine. The electrolytic current flowing through the solution corresponds to theoretical assumptions; it is a correct measure of the SO_2 concentration in the gas supplied, if the solution flows through the electrolytic vessel slowly enough in order not to carry away a substantial quantity of the formed iodine ions before they can undergo electrochemical oxidation on the indication electrode. The principal advantage of these instruments, aside from their high sensitivity and simplicity, is the circumstance that SO_2 concentration can be expressed in terms of the magnitude of electric current (with a known gas flow) without the necessity of gauging them with gases of a known SO_2 concentration.

D-11424

Harders, H.
STOCHASTIC APPROXIMATION OF THE LARGEST INEFFECTIVE DOSE. [Stochastische Approximation der grössten unwirksamen Dosis.] Translated from German. Metrika, 11(2):106-114, 1966. 4 refs.

In a theoretical statistical discussion of a well-known dosage-response model, a sequential procedure for finding a reasonable lower limit for a dosage with a small probability of response is given. The more general problem of finding a dosage with arbitrary given probability of response is solved by the procedure of Robbins and Monro which, however, contains no stopping rule. It is of considerable practical value to have a procedure with a stopping rule for this important special case. Some heuristic points of view to choose an effective procedure are considered. The statistical reasoning used is illustrated by equations and by a flow-diagram indicating, among other features, that the dose applied in the last case yielding a response is never exceeded, and that a new lower dose is applied until either a response is achieved or no response is achieved "i" consecutive times. The goal is to accumulate "n" failures at one and the same dose.

D-11463

Kanitz, Stefano
OBSERVATIONS ON ATMOSPHERIC POLLUTION FROM SUSPENDED DUST BY MEANS OF AN AUTOMATIC SAMPLER. [Relevamento dell'inquinamento atmosferico da pulviscolo sospeso medinate campionatore automatico.] Translated from Italian. Giornale di Igiene e Medicina Preventiva, Vol. 1, p. 57-68, 1960. 8 refs.

The functional details of an automatic suspended dust sampler are described, and results obtained with an apparatus of this type over a two year period are reported. In the sampler, air which is aspired by a suitable pump, driven by an electric motor, is conveyed across a strip of Whatman #4 filter paper wound on two bobbins located at the top and the valley, respectively, of a circular filter with an internal diameter of 25.4 mm. A series of electric circuits regulated by a timing device provides cyclic automatism for the sampling, by controlling the pump, and the progress of the paper strip. Collected samples are estimated by optical means and results expressed as optical density units per cm^2 per m^3. By this method it was possible to observe some characteristic variations of air pollution caused by suspended matter in a residential and in an industrial district of Genoa. Marked differences of pollution were noted between samplings in an industrial district and in a residential district. Only in the residential district was it possible to observe an increase in pollution values during the winter months. The presence of a maximum of high dust values from 7 to 11 in the morning was confirmed.

D-11664T

Suzuki, Hozumi
AN IMPROVED ROTO-ROD-SAMPLER FOR THE STUDY OF AEROBIOLOGY IN PIRICULARIA. Translated from Japanese. Nisshoku Byoshi (Annals Phytopathol. Society, Japan), 31(2):296-299, 1965. 11 refs.

The Perkins Roto-rod spore sampler has been modified so that collection can be made by means of slides. The original sampling surface was tubular, therefore, it was difficult to examine transparent piricularia spores under a microscope. The sampler has been used to improve the method of forecasting disease outbreaks.

E-0163

Fink
ANTIPOLLUTION PROGRAM AND MEASUREMENT EQUIPMENT FOR CHECKING ON THE EFFECTIVENESS OF THIS PROGRAM IN THE ENTERPRISE. [Luftreinhaltung und messtechnische Möglichkeiten ihrer innerbetrieblichen Überwachung.] Translated from German. Werkszeitschrift der Duisburger Kupferhütte, 10(19):15-21, April 1965.

A general assessment of air pollution technologies required to set up an effective air control system is presented. The salient point of the paper centers around an alternating light photometer which the Duisburg Copper Smelting Plant has been successfully using. The concentration measurements made with this home-made photometer are based on the fact that gases reveal a radiation absorption in certain wave length ranges which depends on the gas concentration. By measuring this radiation absorption at a certain wave length or in a certain wave length range, the percentage of the harmful gas after calibration of the photometer with gas-air mixtures of varying concentrations can be indicated directly.

E-0562

Hünigen, E. and W. Prietsch
THE ELIMINATION OF NOXIOUS SUBSTANCES FROM INTERNAL COMBUSTION ENGINES. [Probleme und Lösungswege der Schadstoffbeseitigung bei Verbrennungsmotoren.] Translated from German. Technik, 21(6):377-383, June 1966.

The control of air pollution from internal combustion engines is reviewed. A table is given of maximum permissible concentrations of various components of exhaust gases for East and West Germany, the USSR, and the USA. Methods of measurement of various pollutants are emphasized.

E-1125

Zanon, Domenico and Danilo Sordelli
PRACTICAL SOLUTIONS OF AIR POLLUTION PROBLEMS FROM CHEMICAL PROCESSES. [Realizzazioni nel campo della prevenzione dell'inquinamento atmosferico di origine industriale.] Translated from Italian. Chimica e l'Industria, 48(3):251-261, March 1966.

A strict control of pollutant to be dispersed in the atmosphere offers technical and economic problems, both in the design and the operation of chemical processing units. Three examples of processes for which pollution control has been established are described: SO_2 derived from contact sulfuric acid and from hydroxylamine sulfate plants, nitrous gas from low- and high-pressure nitric acid plants, and fluorine-containing effluents from hydrogen fluoride production. The general approach, kind of abatement process adopted, materials and construction costs are discussed.

E-2053

Oels, F.
DEVELOPMENT OF INSTALLATIONS FOR DESULPHURIZING FLUE GASES IN NORDRHEIN-WESTFALEN. [Stand der Entwicklung von Anlagen zur Entschwefelung von Abgasen im Land Nordrhein-Westfalen.] Translated from German. Proceedings (Part I), International Clean Air Congress, London, 1966, Paper VI/17, pp. 206-208.

In support of development of flue gas desulphurization installations by the State of Northrhine-Westfalia dry processes for desulphurization of hot flue gases are being preferred. According to the Reinluftprocess a plant with a capacity of 55,000 Nm3/h in a chemical factory is being started up. This installation is coupled with a sulphuric acid plant, a Claus oven plant, and an oil burning installation. Another plant of this type with a capacity of 33,000 Nm3/h is being erected in connection with a pitcoal power station in order to test the process with different kinds of furnaces. At the same power station another desulphurization process is being tested by blowing lime or dolomite into the boiler (Wickert process). Finally at a coal-fired power station another desulphurization plant has to be erected using absorption of sulphur dioxide on wet lignite coal filters ash (Still-process). (Author abstract)

E-2934

Martin, H.
AUTOMOBILE EXHAUST GASES AND THEIR DETOXIFICATION. Translated from German. Automobiltechnische Zeit, 67(4):113-115, April 1965. 5 refs.

CO reduction by idling regulation according to the limits set by a VDI (Verein Deutscher Ingenieure Society of German Engineers) Directive will make it possible to reach an immediate solution that is optimal for European conditions, provided cheap measuring instruments are available. Because of the probable simultaneous decrease in the aldehyde component, the odor might also become somewhat less at the same time. If the USA should throttle German exports by stricter detoxification regulations with respect to hydrocarbons, under some circumstances still more would have to be done. Certainly further work will be done in the Federal Republic on the motor side, including among other things an air blast at the exhaust valve. In cases where this does not suffice use will again be made of the reliable catalyst, perhaps with the very same additional air blast at the valve or with a self-regulating exhaust gas fresh air ejector. The catalyst, as an optional pure exhaust catalyst with bypass, might represent a future solution. (Author's summary).

E-2957

Wolf, W. and K. Starke
EXHAUST GAS DETOXIFICATION OF AUTOMOBILE MOTORS. Translated from German. Motortechnische Zeit, 26(3):102-104, March 1965.

The possibilities for detoxification of the exhaust gases from Otto motors (spark ignition engines) are presented and the results of experiments are described. For four of the five devices already approved, experience and experimental data are available. How the Chrysler units and devices on the Man-Air-Ox principle will work out in practice is still to be seen. In the matter of price the last-mentioned units will probably have an advantage since they can be taken care of along with routine servicing, while in catalyst units replacement of the substance about every 20,000 km would be necessary. (Authors' summary)

E-2971

Henrich, G.
PRACTICAL PROCESSES FOR REMOVING SO_2 FROM EXHAUST GASES IN EXPERIMENTAL AND PERMANENT INSTALLATIONS. [Praktische Erfahrungen zur SO_2-Beseitigung aus Abgasen in Versuchs- und Petriebsanlagen.] Translated from German. Lecture presented at the Congress and Exhibition on "Clean Air" at Düsseldorf, Germany, June 4, 1965, 28p. 14 refs.

The extent of sulfur dioxide emissions in various branches of industry is given, and it is shown that the power industry affects these emissions. Since sulphur removal from fuel is technically difficult and expensive, the desulphurization of flue gas at main emission points is the only solution to the problem. Known methods for flue gas desulphurization are described and compared, and subsequently some of the processes tested in pilot plants and on an industrial scale are explained in detail. Numerous data are given on washing methods with limewater (Battersea) and water (Duisburger Kupferhütte), and on the adsorption method using semicoke (Reinluft-method). (Author's summary)

E-3046

Nakagawa, S.
SULFUR DIOXIDE GAS IN EXHAUST SMOKE, ITS REMOVAL, RECOVERY AND UTILIZATION BY WET PROCESSES. Translated from Japanese. Japan Analyst (Tokyo), 15(8):872-881, Aug. 1966.

Thirteen wet absorption processes for the removal of SO_2 in industrial exhaust are reviewed and evaluated in terms of efficiency, economy and recovery by-products. Emphasis is placed on recovering SO_2 in various useful compound forms such as ammonium sulfate and gypsum. A disadvantage of wet processes is that the temperature of exhaust gas decreases, resulting in the decrease of thermal bouyancy and exhaust velocity. The necessary booster power to make up for the difference in exhaust velocity is calculated to be 25.7 KW, assuming the temperature decrease of 80° C and certain typical conditions such as the composition of exhaust gas. Using the same assumed data as above, the effective height of a 50 m smoke stack becomes 142.12 m. Sulton's equations give the maximum SO_2 concentration between 2360 m and 15,840 m depending on the air temperature gradient. From these calculations, it is concluded that wet processes can be used profitably in controlling air pollution if they are combined with appropriate corrective measures.

E-3050

Stehn, Werner
PROBLEMS OF REMOVAL OF FLUE GAS FROM GAS FIRES. [Probleme der Abgasabführung von Gasfeuerstätten.] Translated from German. Gas Erdgas GWF, 107(33):922-932, Aug. 1966. 4 refs.

Methods of removing flue gases from several types of home gas furnaces are described. The problems to which each single method gives rise are thoroughly described in a discussion section at the end of the article. Specifically, the paper mentions conventional chimneys, used either exclusively with gas heaters or with several heaters at once, ducts which lead straight from heaters through outer walls to the outside, community ducts, and closed or so-called "se-ducts". Several cut-off valves (dampers) to isolate given units from the main removal duct are discussed, among them thermostatically controlled cut-off valves and mechanical ones, the latter being either fully automatic or gas-pressure activated, electrically controlled or gas-pressure operated. In conjunction with the discussion of conventional chimneys, the problem of "wet" chimneys is emphasized.

E-3204

Ehnert, W.
BEHAVIOR OF NITRIC OXIDE DURING ELECTROSTATIC GAS PURIFICATION. [Über das Verhalten des Stickstoffmonoxids bei der elektrostatischen Gasreinigung.] Translated from German. Brennstoff-Chemie, 47(9):273-274, Sept. 1966.

The effects of field intensities, ionizing-electrode diameters, duration of the gas in the electrostatic purifier, concentrations of nitric oxide in the gas, and the presence of unsaturated compounds upon the decomposition of nitric oxide were measured by means of an experimental electro-filter situated in a coke-oven plant. Within the range of 0 to 3.8 kv/cm, the quantities of NO decline with increasing field intensity, this decline amounting to only about 10 to 20 percent at field strengths of 2 to 3 kv/cm which are commonly used in coke-oven installations. Industrial-economic considerations, however, place a limit on the extent to which voltages can be increased in practice. The period during which the gases remain in the filter is a factor in the reduction of NO content, but a doubling of this period from 6 to 12 seconds results in a maximum increase in the decomposition rate of only 25 percent. The reduction in NO tends first to decline and then to increase as the diameter of the ionizing electrode is increased. The most effective factor in the reduction of NO contents is the addition of unsaturated compounds; thus the addition of 2.5 ml cyclopentadiene per cu/m of gas increases the loss of NO by a factor of 4 under certain experimental conditions. The experiments show that current commercial coke-oven practice results in reductions of about 20 percent in NO content, and that an increase in the field strengths together with a rise in the unsaturated-compound contents can effect reductions of 50-60 percent.

E-3231

Takai, Masami and Fumiki Nakado
VENTILATION OF ROAD TUNNELS. Translated from

Japanese. Kuki Seijo (Clean Air), 5(6):20-27, March 1966.

Ventilation of automobile exhaust from tunnels is discussed. The permitted level of CO concentration is 0.025 percent. The ventilation rate of a tunnel is defined as the ratio of the amount of harmful gases to the permitted level of each of them. Poor visibility is a problem in tunnels due to smog. The tolerated concentration of this substance is 30-50 percent. Equations are given to define visibility. Three types of ventilation systems are discussed: longitudinal, transverse, and semi-transverse. The first semi-transverse system in Japan was that of the TENNOZAN tunnel. The system is discussed and explained with a cross-sectional diagram and a rough sketch of the whole tunnel.

E-4198

Kimura, K.
EFFICIENCY OF FILTERS FOR RADIOACTIVE AEROSOLS. Translated from Japanese. Rodo Kagaku (J. Sci. Labor) (Tokyo), 42(10):696-702, Oct. 1966. 27 refs.

Electronmicroscopic photographs of thoron daughters from thorium nitrate corrected by a thermal precipitator, and an investigation of the relation between filtering efficiency and the number of sheets of filter paper used showed that the particle diameter of the thoron daughter aerosols was very small and fairly uniform in an examination of various kinds of dust filters using radioactive solid aerosols of the thoron daughters. Thoron and thoron daughters generated from thorium nitrate in a flask were led through a polyethylene tank to the dust filter to be tested. Several kinds of dust filters were tested for their filtering efficiency by measuring the radioactivity of aerosols before and after filtration using a membrane. The filtering efficiency was generally low in most kinds of dust filters which usually showed high filtering efficiency for ordinary dust particles, due to the small particle size of the radioactive aerosol. Fiber glass filters for use in measurement of dust concentrations and A.C.G. (asbestos, cellulose, fiber glass) filters showed over 99 percent filtering efficiency even for radioactive aerosols.

E-4361

Gills, B. G. and E. L. Howe
OIL BURNERS FOR DOMESTIC USE: PRESENT STATE, RECENT IMPROVEMENTS AND FUTURE DEVELOPMENTS. [Ölbrenner für den Hausbrand: Gegenwärtiger Stand, erzielte Verbesserungen und Möglichkeiten der Weiterentwicklung.] Translated from German. Schweizer Archiv, 31(4):119-126, April 1965. 7 refs.

An oil furnace well built and maintained should cause no intolerable air pollution. Soot and a smell of oil will occur only in case of improper adjustment or perhaps in starting up. In the latter case an inadequate means of ignition, too low carburetor temperature, or excessive cooling of the flame may be the cause. Some methods of combating this difficulty are described here (beginning injection of fuel only after an adequate oil pressure is achieved in the pressure atomizer burner; as nearly continuous operation as possible for evaporator furnaces; use of higher pressure for the air of combustion). In pressure atomizer burners such difficulties can usually be traced to defective nozzler or to poor combustion from other causes. Installations which give rise to complaints must therefore be overhauled and replaced if necessary. Determination of unburned hydrocarbons is more difficult. Research in this field concerns itself among other things with the following problems: studies of the emission of unburned hydrocarbons during the starting period; improved mixing of air and oil mists; influence of systems for recirculating smoke gases; ultrasonic and airfoam atomizer burners; electrostatic oil atomizing; total evaporation of the fuel in the vaporizer burner; and speed of combustion.

E-4862

Petersson, Folke
AGGRESSIVE SOOT—A SERIOUS CORROSION PROBLEM. [Aggresivt sot--ett allvarligt korrosionsproblem.] Translated from Swedish. Tidsskrift for Varme, Ventilation, Sanitet, No. 1, p. 19-24, 1967.

A review is presented of the corrosiveness of soot particles, conventional protection methods, the process of soot formation, the formation of sulfuric acid, adsorption by soot particles, suppression of floc formation, and practical tests conducted at Tekniska Hogskolan in Stockholm. An improvement is advanced; an increase of the boiler water temperature when heating with heavy oils appears to be justified. The increase should be up to 150° C for the adsorption of aggressive substances on soot particles to be adequately suppressed. The proposed increase should result in reduced damage to protective coatings, automobile lacquers, ladies' stockings, and clothing where aggressive soot flocs easily produce point attacks. In addition the corrosion on the fireside surfaces of the heating boilers will be substantially reduced.

E-5137

Johswich, F. and E. Wahnschaffe
DESULFURIZATION OF FLUE GASES. [Entschwefelung von Rauchgasen.] Translated from German. VIK (Vereinigung Industrielle Kraftwirtschaft) Berichte, No. 155, p. 20-43, Aug. 1964. 3 refs.

The method for the desulfurization of flue gases according to the dolomite procedure was investigated with the help of a 175 t/hr oil boiler. The factor that was decisive for desulfurization was the temperature that prevailed in the boiler at the place where the desulfurization material is inserted. The effect of the distribution, the duration of time (in the boiler), the effect of the catalyst and of the volume of the material to be used were of secondary importance. It is understood on the basis of the description of the experimental results, that these results for the time being apply only to the experimental boiler. Some of the basic problems could not be resolved and new basic problems arose; these problems must be answered for the purpose of planning and giving a guarantee in connection with the erection of a desulfurization installation. Additional series of experiments are necessary before the method is ready for actual operation. (Authors' summary modified)

E-5275

Barth, Walter
THE EVOLUTION OF THE TECHNOLOGY OF DUST REMOVAL. Translated from German. STAUB, 21(9): 382-390, Sept. 1961. 43 refs.

Although the problems of dust nuisance are very old, it has only been possible to speak of an actual dust-collecting technology in the last 70 years. The basic patents for filter dust collection and cyclone dust collection were announced in 1886 and for electrical dust collection in 1908. Between the first proposals and final introduction of the methods into practice there was a gap of between 20 and 40 years. The processes in dust collection are in many cases of a technical flow nature and hence can be treated by technical flow methods. This is shown particularly for the case of the development of the cyclone collector. On the basis of newer knowledge, a systematology is proposed for the cyclone collector using certain characteristic values.

E-5309

Betz, E. C. and H. J. Feist
CATALYTIC AFTERBURNING OF ORGANIC AIR POLLUTANTS. [Die katalytische Nachverbrennung von organischen Luftverunreinigungen.] Translated from German. Die Technik, 20(6):395-400, June 1965.

Newly developed all-metal catalysts are discussed which are designed on the basis of the building block assembly system; in practice, they achieve an average running time of 25,000-35,000 working hours. A catalyst, which speeds up a reaction because of its presence, without itself participating in the reaction, reduces the decomposition temperature during combustion. A reaction temperature of 250-350° C was achieved with all-metal catalysts developed for catalytic exhaust gas purification. The cold exhaust gases flow through a heat exchanger and are preheated. Then they are heated by means of oil burners, gas burners, or electrical heating elements until they reach the catalytic reaction temperature. A fan then moves the exhaust gases to the catalyst where the irritants are oxidized. The heat released during catalytic combustion is largely recovered in the heat exchanger and it is used for heating the cold exhaust gases as combustion here is exothermal. At a reaction temperature of about 250-350° C, all combustible components are oxidized in the exhaust gas. As a result of the temperature increase in the exhaust gas in the catalyst, the positive heat change of this reaction can be measured which gives a figure directly proportional to the irritant concentration. The catalytic exhaust gas purification unit thus serves as a measurement instrument for the concentration of the exhaust gas. A measurement system used for continual surveillance is diagrammed. Applications of catalytic afterburning are discussed in relation to the following: drying and hardening processes, phthalic acid and maleic acid anhydride production, nitric acid production, NO/NO_2 reduction.

E-6280

Sweden. Ministry of Communication Expert Group for Development in the Field of Auto Exhaust
DIESEL EXHAUST GASES: INVESTIGATION WITH PROPOSALS FOR ACTION. [Dieselavgaser: Utredning med förslag till åtgärder.] Translated from Swedish. Stockholm, Sept. 1967, 74p. 27 refs.

Diesel exhaust emissions and methods of controlling these emissions in Sweden are reviewed. The diesel engine differs from the gasoline engine in several respects, which have a decisive influence on the pollution it emits. It uses a fuel that is less volatile than gasoline. It normally works with a higher excess of air (leaner mixture) and the devices for feed and ignition of the fuel are quite different. Due to the discharge by individual vehicles of dense smoke and by the discharge of foul-smelling substances they have been pointed out by the public as serious air polluters. Poor maintenance of the engine or intentionally wrong pump adjustments can result in the giving off of such dense smoke that this can constitute a hazard for overtaking vehicles due to impaired or obscured visibility. Diesel engines can give off various types of smoke. One type is the heavy load smoke, which arises through load on a hot engine. Exhaust gases from diesel vehicles, especially under certain driving conditions, contain substances that are irritating to eyes, nose and throat. These include: oxides of nitrogen, hydrocarbons, polycyclic aromatic hydrocarbons, carbon monoxide, and sulfur dioxide. The smoke from a diesel engine can be limited by various measures, undertaken on the engine or the fuel pump, the fuel, and finally on the exhaust gases. Regular maintenance of the engine is necessary to keep the smoke values at the lowest possible level. Current and proposed regulation of diesel exhaust emissions are discussed.

E-6678

Japan. Kanagawa Industrial Experiment Station
REMOVER OF SULPHUR DIOXIDE GAS. Translated from Japanese. 5p., 1967.

A method for removal and absorption of sulphur dioxide, which is applicable to other gaseous substances, is described. This equipment processes sulphur dioxide gas, discharged by a smoke duct with water or a weak alkali solution, fixing the sulphur dioxide gas in burned and discharged gas. The processing water or fluid is a thin membrane through which burned and discharged gas must pass upon leaving. Effective absorption is achieved by reducing the current speed of gas within the equipment. Designs permit continual renewal of air liquid contact and control of loss of gas pressure. With this system, SO_2 can be almost completely removed and large quantities of gas can be processed at a low cost.

E-6835

(Anonymous)
STUDIES ON SMOKE PURIFICATION. Translated from Italian. Fumi and Polveri, 6(3):69-85, March 1966.

Testing conditions for chimney-mounted smoke purifiers was to determined. The ultimate aim was to devise a method for controlling the efficiency of such devices. Five devices were tested, none of which had forced draft, mechanical acceleration of the velocity of the combustion gases, or water scrubbing. The effect of various wind speed on the velocities and the pressure drop in the devices was measured in an experimental tunnel. The capture efficiency of the devices was tested using cold balsa and silica dusts to simulate soot agglomerates. The efficiency was further tested on a restaurant kitchen coal furnace, a screw-shaped coal burner in a cast-iron boiler, a coal stove and a liquid fuel burner mounted on the boiler. Stack samples were examined by optical and electron microscopy and the deposits' acidity was determined. Some test methods are proposed.

E-6999L

Spengler, Günter and Georg Michalczyk
SULFUR OXIDES IN SMOKE GASES AND IN THE ATMOSPHERE: A PROBLEM OF KEEPING THE AIR CLEAN. [Die Schwefeloxyde in Rauchgasen und in der Atmosphäre: Ein Problem der Luftreinhaltung.] Translated from German. VDI (Verein Deutscher Ingenieure) Verlag, Düsseldorf, 1964, 152p. 53 refs.

Since there are no methods that will reliably prevent SO_2 emissions and at the same time operate with some degree of economy and efficiency, a compilation of the literature available on this problem was arranged from a critical view point. The information is taken from generally available literature, private communications and reports by domestic and foreign agencies in government and industry. The following subjects are discussed: The sulfur content of fuels; the formation of SO_2, SO_3, and sulfuric acid; a general review of the physiological influences of SO_2 on man, animal, and plants; the corrosion behavior of sulfur oxides; analytical methods for the determination of sulfur oxides; and legal measures for keeping air clean in West Germany, Great Britain, Russia, and the United States. Methods for the removal of SO_2 from smoke gases by absorption, adsorption, catalytic oxidation, reduction, desulfurization of fuels, and control equipment are discussed. Some economic and industrial problems connected with the removal of SO_2 and a bibliography of 360 documents and communications are included.

E-7228

Herrmann, E.
APPARATUS AND INSTALLATIONS FOR CATALYTIC AFTERBURNING. [Apparate und Anlagen zur katalytischen Nachverbrennung.] Translated from German. Chemie-Ingenieurwesen-Technik, 37(9):905-912, 1965.

The catalytic combustion of waste gases and vapors has the purpose of keeping the air clean and producing heat energy or infrared radiation. The simplest types of catalysts are those used in diesel and Otto engines. For burning industrial waste gases the catalysts become more complex. Three different types most widely used are catalysts whose active component is thinly spread out over chromium-nickel-steel substrates, over ceramic bars, and over the inner and outer surfaces of small cylindrical ceramic bodies of various sizes. The temperature of the waste gas is important for efficient catalytic afterburning. The efficiency may increase rather steeply by raising the temperature by only a few degrees. The influences of the flow rate of the gas through the afterburner on the efficiency is discussed in detail. The useful life and possibilities for regeneration of the catalysts is discussed. The costs of a catalytic afterburning system are determined not only by the catalyst but also by the requirement of a heat exchange system or of preheating the waste gas. This applies especially to waste gases of less than 1000 kcal/m^3. An example for such a system as well as for a catalytic infrared radiator are briefly described.

E-8036

Wicke, E.
FUNDAMENTALS OF CATALYTIC AFTERBURNING. [Grundlagen der katalytischen Nachverbrennung.] Translated from German. Chemie-Ing. Techn., 37(9):892-904, Sept. 1965. 27 refs.

Catalytic afterburning proved itself as suitable for the removal of objectionable and harmful impurities from industrial exhaust gases in a number of instances. The length of the catalyst stretch that must be passed by the exhaust gases to attain a certain degree of conversion (degree of oxidation) can be characterized in terms of the 'length of a conversion unit' provided that the reaction is first-order and proceeds approximately isothermally. This term encompasses in a rational manner the effects of reaction rate and catalyst activity (including catalyst porosity and internal surface), gas flowthrough, longitudinal mixing, and material transfer between gas flow and catalyst surface. The material transfer imposes minimum lengths for a conversion unit; these were explained in more detail for a particle layer and for insert catalysts with perpendicular flow within tube clusters. If the conditions deviate strongly from formal kinetics of the first order, this treatment no longer remains applicable, as has been shown on the example of an autocatalytic oxidation of CO on a Pt carrier catalyst. At higher concentrations of components to be oxidized, increasing temperature profiles develop along the catalyst layer: these were discussed under the assumption that the operation is adiabatic. As the heat generation and the activation energy of the reaction increase, more and more of the total conversion will crowd into a relatively short layer cross section with a steep temperature gradient. Under certain conditions, thermal instabilities may occur here for the catalyst. These lead to the formation of 'combustion zones,' which are stationary only at a characteristic 'combustion rate' and gas flow rate within the catalyst layer. Curved combustion zones are able to adapt themselves within wide ranges to changing gas flow rate by expansion or shrinkage. Concentration profiles measured in a combustion zone created with a butane/oxygen mixture indicate the intensity of the reaction in the steep temperature rise range. Combustion zones could be created at relatively small temperature gradients and relatively low intake temperatures in the autocatalytic oxidation of CO on Pt catalysts. (Author's summary)

E-8989

Nakai, Yoshiyuki and Tetsuya Yokogawa
THE STUDY OF MULTI-PURPOSE GAS ABSORBER BY WET PROCESS. Translated from Japanese. Kagaku Kogyo [Chemical Industry] (Tokyo), 18(12):44-51, Dec. 1967.

A wet process gas absorber developed at the Kanagawa-Ken Industrial Experiment Laboratory was tested to determine its efficiency in eliminating sulfur dioxide. Its compact size, minimum pressure loss and absorption speed, are described favorably. This absorber can also be used as a dust collector, or as a cooling tower as well as for desulfurization. Detailed test results are not given. The provision of several thin mesh screens inside the absorption tower increased liquid surface contact with the gas and permitted the comparatively small equipment to handle large quantities of gas. The relationships between the height of the liquid screen and the liquid/gas ratio are calculated to show that by increasing the number of screens, the concentration of SO_2 gas can be reduced to the desired level. Further tests were then carried out at a steel factory in Kawasaki, Japan, and the results tabulated. 4,200 m^3/hr (at 40° C) exhaust gas with a liquid/gas ratio of 0.78 showed 85 percent absorption.

E-9607

Veverka
DESIGN OF AN AMMONIACAL DESULFURIZATION UNIT FOR 100 MW. [Entwurf einer ammoniakalischen Entschwefelungsstrasse für 100 MW.] Translated from German. In: Proceedings, International Symposium on Air Purification and the Utilization of Sulfur Dioxide and Fly Ash from Steam Power Plants, Liblice (Czechoslovakia), Oct. 1965, p. 98-104.

A method is presented whereby SO_2 is removed from power plant stack gases with ammonia scrubbing. The gases, containing 0.15 to 0.30 mole-percent SO_2, are cooled to 160° C, washed in a "bicyclic" (two-stage) scrubbing system, reheated to increase subsequent thermal plume rise, and then exhausted. The absorption solution is regenerated by boiling. SO_2 in the resulting vapor is condensed and dried with H_2SO_4. Ammonium sulfate is a by-product. The following topics are discussed qualitatively: corrosion, system heat balance, heat conservation, fly-ash removal, materials of construction, and economics.

E-10836

Barth, Walter and Ludwig Leineweber
EVALUATION AND DESIGN OF CYCLONE SEPARATORS. [Beurteilung und Auslegung von Zyklonabscheidern.] Translated from German. STAUB (Düsseldorf), 24(2): 41-55, Feb. 1964. 19 refs.

In the assessment of the capacity of cyclone separators, it is necessary to consider the plant costs, space requirement and operating costs in addition to the separating performance. A system is developed with the aid of which, under given operating conditions, an optimal design of the cyclone separator can be achieved. The magnitude of the torsional force in the cyclone separator is determined both experimentally and by calculation and conclusions are made about the separating performance to be achieved. With the aid of a model experimental rig for cyclone separators, the influence of the various constructional parameters on pressure loss and separating performance are evaluated. The experimental results are compared with theoretically calculated results and good agreement is found. By better matching of the cyclone separator to the operating conditions in practice, further real improvements should be achieved.

E-10886

Fiala, E. and E.-G. Zeschmann
THE AUTOMOBILE EXHAUST GAS PROBLEM. [Zum Abgasproblem der Strassenfahrzeuge.] Translated from German. Automobiltech. Z. (Stuttgart), 67(9):419-422, 1967. 58 refs.

The problem of improving the automobile exhaust gas composition is discussed on the basis of literature and original experiments. Various sources of undesirable exhaust gas components are listed and discussed. Measures for improving the exhaust gas composition such as traffic flow control and engine modifications are analyzed in detail. Changes in compression ratio, setting of idling speed for lean mixture, cutting of fuel supply during braking, heating of engine for cold starts, etc. are some of the modifications discussed. A lower compression ratio in diesel engines and a limited fuel injection would improve diesel exhaust gases. Also electric drives are covered. It is concluded that Diesel and Otto engine exhaust can be substantially improved if a somewhat lower performance is accepted. A prerequisite for such measures would be legislation binding for all manufacturers. A unified European solution is recommended.

E-10888

Keller, Helmut
AN AIR-COOLED OSCILLATING MOTOR. [Ein luftgekühlter Wankelmotor.] Translated from German. MTZ Motortech. (Stuttgart), 26(4):165-167, April 1965.

The characteristics of a rotating piston gasoline engine (Wankel engine) designated as KM 37 are described in detail. The advantages are the lower gasoline consumption and the torque which is effective for 270° of shaft revolution while this is more than in two-stroke or four-stroke engines. Design and manufacturing details of the engine whose serial production was started in 1964 are described.

E-10926

Alekseyeva, M. V., A. S. Ozerskiy, and V. A. Khrustaleva
DECREASING THE CONCENTRATION OF TOXIC EXHAUST FROM AUTOMOBILE ENGINES. [O snizhenii kontsentratsii toksicheskikh otrabotannykh gazov avtomobil' nykh dvigatelei.] Translated from Russian. Gigiena i Sanit., Vol. 27, p. 3-7, Dec. 1962. 1 ref.

Automobile engines idling during change of gear, braking, or standing operate in a regime during which the toxicity of exhaust gases increases substantially. This is due to the fuel rich mixture yielding a high percentage of incomplete combustion products. This phenomenon has been studied and an air-fuel ratio regulator was developed which is mounted in the intake line and starts operation automatically when the engine idles. Gas samples with and without the device were analyzed under various operating conditions. Without the device carbon monoxide contents ranged from 3.2 to 7.8 percent while with use of the device it was only 0.4 percent. Also the concentration of benzene, acrolein, and formaldehyde decreased substantially. The device was tested on city buses with good results.

E-10927

Kohn, Hellmuth
THEORY AND PRACTICE OF DUST COLLECTION BY MEANS OF CLOTH FILTERS. Translated from German. STAUB (Düsseldorf), 21(9):437-443, Sept. 1961. 11 refs.

The problem of correctly classifying the various types of cloth dust filters available for industrial use is discussed. Emphasis is placed on filtering characteristics in relation to the nature of the dust layer which remains on the cloth during filtering. Two instruments most suitable for measurement under test conditions are described: the dust mass probe and the velocity probe. Formulas, graphs, and tables are given to demonstrate the methods used to evaluate different materials and circumstances best suited for specific industrial applications.

E-10932

Nickel, Werner
ON PRACTICAL USE OF THE CENTRIFUGAL DUST SEPARATOR. Translated from German. STAUB (Düsseldorf), 23(11):509-512, Nov. 1963. 4 refs.

A centrifugal dust separator of 200 mm diameter was tested for coal and stone dusts. The separator had been previously developed for a capacity of 350 m^3/hr. The problem of increasing the capacity of such a unit is discussed by increasing the size of a single unit or by arranging several units in a multi-cell installation. Pilot units of 500 mm and 1000 mm diameter were tested and up-scaling of methods were theoretically developed. Development of a large multicell unit with a capacity of 30,000 m^3/hr for dust collection in a tar-macadam plant is also discussed.

E-10933

Schaufler, Erwin, Karl Heinz Oehrlich, and Karl Rudolf Schmidt
THE CENTRIFUGAL DUST SEPARATOR. Translated from German. STAUB (Düsseldorf), 23(4):228-230, April 1963. 1 ref.

The principle of a newly developed dust separator is explained. The operation of the separator is based on a vortex generated by countercurrent gas injection into the raw gas moving upwards in a vertical tube. To reinforce the separating effect a drop shaped bluff body is placed in the tube. Separation efficiencies for different particle size fractions were determined in a 200 mm diameter separator. Tests with larger units (300-1000 mm diam.) have also been conducted. The installation of a separator into the smoke stack of a power plant (2-2.5 m diam.) is being planned.

E-10934

Schmidt, Karl Rudolf
PHYSICAL BASIS AND PRINCIPLES OF THE CENTRIFUGAL DUST SEPARATOR. Translated from German. STAUB, (Düsseldorf), 23(11):491-501, Nov. 1963. 8 refs.

The physical principle of a new centrifugal dust separator is described in detail. First the theory of rotational and potential flows including source and sink flows is analyzed. Then the theory of the separator is derived. The separator is based on the principle that the raw gas flows upwards in a vertical tube and a secondary gas stream is injected countercurrently. The latter imparts a rotating motion which effects separation of the dust. This principle is compared with that of a conventional cyclone, and the advantages are evaluated. The vortex source effective in the centrifugal dust separator is responsible for its higher efficiency as compared with a cyclone working on the basis of an eddy sink.

E-10935

Klein, Heinrich
DEVELOPMENT AND CAPACITY LIMITS OF THE CENTRIFUGAL DUST SEPARATOR. Translated from German. STAUB (Düsseldorf), 23(11):501-509, Nov. 1963. 17 refs.

The development of a pilot model of a centrifugal dust separator is described in detail. The separator is based on the principle that the gas containing the dust flows upwards in a vertical tube and a secondary air jet is injected at a certain angle countercurrently into the gas. The raw gas inlet design, the jet angle and configuration, the pressure ratios, the possibility of using more than one jet, the efflux baffle design, prerotation of raw gas and other parameters affecting the separation rate and efficiency were studied. Also upscaling of units is treated.

E-10936

Hedwall, Ake
SOOT FALLOUT — UNAVOIDABLE? [Sotnedfall — ofrankomligt?] Translated from Swedish. K-Kontur (Stockholm), Vol. 1, p. 17-20, 1965.

The problem of soot pollution in Stockholm is discussed. Despite extensive research in combustion technology, approximately 15 tons of soot settle over Stockholm every day. Aspect of the problem, such as building codes, effect of oil burning, size of flue area, height of smokestacks are mentioned. The importance of dust separators is stressed. A plea is made for increased attention, through regulatory means, if necessary, to the improvement of fuel combustion so as to reduce by at least 75 percent the amount of soot emitted into the atmosphere at present. A system of continuous soot removal from furnace surfaces by water scrubbing recommended by some manufacturers, is rejected as leading to damage by water pollution.

E-11422

Japan. Air Filtering System Designing Committee
STUDIES CONCERNING THE EFFECTS OF ATMOSPHERIC

POLLUTION ON THE INDOOR ENVIRONMENT AND MEASURES TO PREVENT POLLUTION. Translated from Japanese. J. Japan Air Cleaning Assoc., 4(5):1-31, Jan. 1967. 24 refs.

Indoor and outdoor pollution were compared to determine the various capacities of air cleaning and ventilation equipment for reducing the effects of atmospheric pollution on the indoor environment. The results were used to establish the standards for the installation of air cleaning equipment in a building. The building selected was provided with two air filters with high dust efficiencies. The following items were determined: 1. Change in outdoor air pollution with time; 2. Change in indoor air pollution with time; 3. Air quantity of ventilation system; 4. Quantity of air infiltrating into the building; 5. Air pollution upstream and downstream of air filters; 6. Changes in the number of people in the room; and 7. State of smoking in the room. The results were analyzed and compared with theoretically calculated data concerning the efficiency of air cleaning equipment. In order to know the state of particles floating in the air, the following measurements were necessary: 1. concentration of particles; 2. distribution of particle size; 3. physiochemical composition; and 4. change in particle concentration with time and space. Two methods were applied for dust concentration measurements: the discoloration method, measuring the optical density of the filter paper, and the weight method, measuring the relationship between optical density and the weight density of the dust. The dust removing efficiencies of the installed air filters were calculated from their upstream and downstream dust concentrations. From the data obtained, the dust quantity generated in a room was calculated.

E-11445

Kohn, Hellmuth
CLOTH FILTERS FOR THE REMOVAL OF DUST FROM CUPOLA AND ELECTRIC FURNACES. [Gewebefilter für die Entstaubung von Kupolöfen und Elektroöfen.] Translated from German. STAUB, 23(11):530-535, Nov. 1963.

Cloth filter installations for dust removal from waste gases from a hotblast cupola furnace with recuperator, two electric reduction furnaces, and a 60-ton electric smelting furnace are described in detail. Cupola furnaces and electric furnaces emit a very find dust which in all cases must be designated as a nuisance. In the dry collection of these dusts, very high efficiency collectors are necessary. Recently cloth filters have been used in Germany with success. With residual dust contents which lie in the order of magnitude of mg per m^3, the waste gas plumes are no longer visible. In many cases, however, the high waste temperatures must be reduced by connecting coolers in series.

E-11446

Schnitzler, Hermann
DRY ELECTRO-FILTERS FOR DUST REMOVAL IN CUPOLA FURNACES. [Trocken-Elektrofilter zur Kupolofenentstaubung.] Translated from German. STAUB, 24(6):201-205, June 1964. 4 refs.

A dry electro-precipitator for cleaning cooled combustion gases from a hotblast cupola furnace, after passage through the recuperator, is described. It removes about 94 percent of the dust with a resulting dust content of about 60 mg per m^3. The relationship between the quantity of injected water and the efficiency of dust removal and electrical dust resistivity are reported. For optimal efficiency in cleaning off the precipitation plates, a pause length of 15 minutes between rapping periods was chosen upon investigation. Interim results obtained on a new type of electroprecipitator, in which the electrodes are situated perpendicular to the flow of gas, are also reported.

E-11454

Corver, H.
AIR POLLUTION AND AGRICULTURE. [Pollution atmosphérique et agriculture.] Translated from French. Confédération Européenne Agr. Publ. (Brügge), Vol. 24, p. 182-194, 1963.

Planning measures are the prime requirement for avoiding setbacks to agriculture due to air pollution now and in the future. These measures concern the location of industrial sites with regard to agriculture areas, consideration of meteorological conditions, the surface configuration, the height of chimneys and the concentration of industries. In addition, further research must be encouraged with regard to the sources of impurities and measures to prevent or restrict air pollution. Uniform methods for measuring the levels and for setting limits to air pollution must be established. The agricultural industry must do more agricultural research and must study the results. The minimum requirements for air purity and sunlight for maintenance of reasonable agricultural production can thus be formulated. The agricultural community must be considered and consulted as an important participant in discussions.

E-11460

Johswich, F.
REMOVING SULFUR FROM FLUE GAS: SIGNIFICANCE AND PRACTICAL POSSIBILITIES. Translated from German. Brennstoff-Wärme-Kraft, 14(3):105-115, 1962. 21 refs.

A critical survey of the basic processes for the removal of SO_2 is presented, with emphasis on economic feasibility. Additive and wet scrubbing procedures are generally unsuitable. Of dry absorption and adsorption procedures, the latter have more successful prospects in relation to technical applicability and economic feasibility. Of the absorbents, only activated charcoal is suitable at the present time, in spite of its high cost. The development of a new process has placed the application of activated charcoal on an economically feasible basis. The need for activated charcoal is avoided in the pure-air process (Reinluft) in that the material used is not prepared activated charcoal, but cheap semicoke or hard coal, peat, brown coal, and other similar carbon carriers, calcinated at about 600° C. Without additional provisions and expenditures, they activate themselves during their application. The pure-air process is discussed in detail, indicating useful information on economic replaceability, required floor space, auxiliary materials, utilizability of amounts collected, adaptability, corrosion, other gas pollutants, reconstruction of existing apparatus, flues, and areas of application and technical position.

E-11652

Kmoch, H.
AUTOMATIC CONTROL OF REFUSE INCINERATORS. [Automatische Steuerung von Müllverbrennungsanlagen.] Translated from German. Brennstoff-Waerme-Kraft, 16(8):402-403, Aug. 1964.

The devices (such as temperature controllers, control valves, air blowers, etc.) required for control guidance, and monitoring of plants for refuse incineration only and plants for refuse incineration with heat utilization are discussed and illustrated. In design work, consideration must be given to the fact that the plants are usually operated by relatively unskilled personnel, also that the very rough operation of the plant with much fly dust and acid effluents requires tough and corrosion-resistant devices. It is also important for the control system to be protected against interruption in operation by blockage. In the heat utilization design, the scheme of the units conforms to a great extent to that of a steam generating plant; auxiliary oil or gas firing may be used to provide extra steam during peak load periods.

E-11658

Ochs, Hans-Joachim
THE USE OF AIR FILTERS IN REFUSE INCINERATION PLANTS. [Einsatz von Luftfiltern in Mullverbrennungsanlagen.] Translated from German. Wasser Luft und Betrieb, 8(9): 535-537, Sept. 1964.

A recirculating filter system equipped with a sludge-free fine-filter for collecting dust in a refuse incinerating plant in Hamburg, Germany is described and illustrated. Much dust invariably rises from refuse storage bins located underneath the furnaces and must be controlled. The air filter system used involves spraying a wetting material under pressure through the recirculation cells from the wetting material container from underneath the recirculating filter element that is normally used only for the wetting agent for contact rinsing. The wetting material, as it passes through the recirculating filter cells, loosens the accumulated dust deposited on the cells, becomes enriched with it, and forms a sludge precipitate at its bottom. This sludge, in turn, is discharged at the bottom of the wetting material container and passed to settling tanks whence it is recirculated into the system after subsequent settling and filtration.

F-0074

Pukhov, V. A.
EFFECT OF ADRENOCORTICAL INSUFFICIENCY AND HYPERFUNCTION ON THE SENSITIVITY OF RATS AND MICE TO CARBON MONOXIDE POISONING. Translated from Russian. Farmakologiya i toksikologiya, 27(3):343-345, June 1964. 8 refs.

The aim of this work was to study the effect of adrenocortical insufficiency and hyperfunction on resistance to carbon monoxide poisoning. A total of 138 rats and 45 mice of both sexes was used. CO poisoning was produced through static asphyxiation with concentrations of CO at 10 and 1.6 mg/l with exposures of 15, 30, and 180 minutes. Eight days before the asphyxiation the adrenals were removed from 25 rats, autotransplants of the adrenals were performed on 63 rats by Kulagin and Shurygin's method. In one of the series of experiments 15 mice were given intramuscular injections of 0.2 unit/kg of ACTH for a week before asphyxiation. The following indicators were studied: Length of life and animal behavior during and after asphyxiation, respiratory rate per minute, rectal temperature, body weight, leucocyte and eosinophil count, blood formula. The adrenal transplants were examined histologically. Following adrenalectomy the animals were listless, inhibited, and slow to react to tactile and pain stimuli for a period of 5 to 7 days. Within a week after the operation, 45 percent of the animals showed a drop in body weight of 10 to 20 grams and a 23 percent reduction in oxygen consumption. The adrenalectomized rats were more subject to pustular diseases of the skin. Within a week after removal of the adrenals the number of eosinophils had more than doubled; the leucocyte count increased an average of 8000. A week after adrenalectomy the sensitivity of rats to CO increases. Sensitivity of rats to CO poisoning remains high during the first 2 weeks after autotransplantation of the adrenals. A month after the operation this sensitivity is close to the resistance of intact animals. Preliminary injections of ACTH increases the resistance of rats to CO.

F-0093

Kozlov, V. M. and V. D. Turovskiy
BERYLLIUM: TOXICOLOGY, CLINICAL ASPECTS OF DISEASES AND LABOR HYGIENE. [Berilliy: Toksikologiya, klinkia porazheniy, gigiyena truda.] Translated from Russian. State Publishing House for Literature in the Field of Atomic Science and Technology, Moscow. Dec. 3, 1962, 32p. 27 refs.

This report is a translation of parts of the Russian-language book by Kozlov and Turovskiy: toksiko logiya, klinika porazheniy, gigiyena truda. The following chapters are included: (1) Experimental Toxicology of Beryllium and Its Compounds; (2) Labor Hygiene in Working with Beryllium; (3) Protection of the External Environment from Beryllium Contamination.

F-2105

Tacquet, A., A. Collet, B. Devulder, J.-C. Martin, A. Policard and Ch. Gernez-Rieux
DUST-COATING OF THE LUNGS AND EXPERIMENTAL INFECTION BY MYCOBACTERIUM KANSASII. I. INFLUENCE OF INERT DUST AND OF DIFFERENT INFECTANT DOSES. [Empoussierage pulmonaire et infection experimentale par Mycobacterium Kansasii. I. Influence des poussieres inertes et de differentes doses infectantes.] Translated from French. Path.-Biol., 14(15-16/17-18):781-789, 1966.

In an effort to define the mechanism of the interaction between dusts and infections in the parenchyma of the lung, the authors studied the influence of the inhalation of inert dusts, which had been deprived of all true chemical toxicity, on experimental infection with Mycobacterium Kansasii var. luciflavum in the guinea pig. Biological, radiological, histo-pathological and bacteriological examinations were carried out systematically and showed the aggravating influence of carbon dust on this type of infection. Inhalation of dust is sufficient to convert a local inoculum which is usually incapable of provoking lesions into a pathogenic one. This aggravating influence of dust shows itself by important radiological, anatomical and histo-pathological changes and by a considerable increase in the number of germs isolated from the parenchyma of the lung. It is a function of the importance of the bacteriological inoculum and the time of infection, before or after the influence of the dust. It does not appear after inoculation with non-viable germs. (Authors' summary)

F-2106

Tacquet, A., A. Collet, J.-C. Martin, B. Devulder, and Ch. Gernez-Rieux
COATING OF LUNGS WITH DUST AND EXPERIMENTAL INFECTION BY MYCOBACTERIUM KANSASII. II. INFLUENCE OF VARIOUS ANTITUBERCULOSIS SUBSTANCES. [Empoussierage pulmonaire et infection experimentale par Mycobacterium kansasii. II. Influence de diverses substances antituberculeuses.] Translated from French. Path.-Biol., 14(15-16/17-18):790-795, 1966.

After defining the aggravating effect of the inhalation of inert dusts on the development of experimental mycobacterial infection, the role of anti-tuberculous chemotherapy in the guinea pig submitted to the double effect of dust and infection is studied. It is shown that when "in vitro" active antibacterial substances are used on the strain of mycobacterium, they are capable of attenuating and avoiding serious tuberculous lesions in the lungs of untreated animals if given early and regularly. Previous dust inhalation in the guinea pig allows germs which are only slightly pathogenic to form lesions and this gives excellent "in vivo" conditions for the study of the activities of new anti-tuberculous substances on so called "atypical" mycobacteria, which are sometimes responsible for chronic infection. (Authors' summary)

F-2283

Burda, A. S. and N. A. Oborin
THERAPEUTIC EFFECT OF CYTOCHROME C IN ACUTE CARBON MONOXIDE POISONING IN ANIMALS. Translated from Russian. Gigiyena Truda i Professional'nyye Zabolevaniya, Vol. 7, p. 56-57, August 1963. 14 ref.

The intravenous injection of 3.5-2.25 my/pr kg of weight in rabbits severely poisoned with carbon monoxide has shown therapeutic value. Cytochrome C in the above amounts was completely safe for the rabbits. In the light of the literature on the effectiveness of cytochrome C for carbon monoxide coma and other hypoxemic states in human beings, it is recommended that the substance be tested clinically.

F-2591

Datsenko, I. I.
THE EFFECT OF AEROIONIZATION ON THE ANIMAL'S ORGANISM IN CO INTOXICATION. [Vliyanie aeroionizatsii no organizm zhivotnykh pri intoksikatsii okis'yu ugleroda.] Translated from Russian. Gigiena i Sanitariya, 29(8), Aug. 1964. 1 ref.

Intoxication of the organism with carbon monoxide results in a decrease of activity of the cholinesterase of blood serum. This can be used as a sensitive index of the degree of poisoning. Changes in the organism under chronic intoxication with carbon monoxide are persistent, as demonstrated by the incomplete restoration of the activity of cholinesterase for three months after the inspiration of CO stopped. The use of air ionization had a favorable effect on the organism under conditions of the action of carbon monoxide on the body.

F-2924

Hamelin and Muler
CONTRIBUTION TO THE STUDY OF COCHLEO-VESTIBULAR DISORDERS DUE TO OXYCARBONATED INTOXICATION. [Contribution a l'etude des troubles cochleo-vestibulaires de l'intoxication oxycarbonee.] Translated from French. A thesis for a degree at the Academy of Paris. 1957, 66p. 33 refs.

Cochleo-vestibular disorders are observed rather rarely in oxycarbonated intoxication, especially with respect to its great frequency. In effect, carbon monoxide does not exercise an elective toxic action upon the ear. Essentially it causes general and nervous manifestations and it produces hearing disorders and objective vestibular disorders only occasionally. Their rarity may perhaps be more apparent than real because these disorders are often discreet and are really in the background in the general and rather severe picture of acute intoxications; they are often voluntarily overlooked in the case of chronic intoxication which is above all objective and even this chronic intoxication is often overlooked. However, the literature on the subject does offer several observations of indisputable cochleo-vestibular lesions; these observations have been published during or after cases of intoxication due to carbon monoxide. Three cases of acute intoxication are reported.

F-2959

Zenk, H.
CARBON MONOXIDE POISONING IN OTOLOGICAL INDUSTRIAL AND MEDICAL EXPERT TESTIMONY PRACTICE. [CO-Intoxikationen in der otológisch-arbeitsmedizinischen Gutachterpraxis.] Translated from German. Int. Archiv für Gewerbepathologie und Gewerbehygiene, 20(12):432-442, May 1964. 35 refs.

The occupational composition and symptoms, on the basis of 50 reports in which carbon monoxide poisoning was suspected in claims processed, are discussed. The audiological picture of acute carbon monoxide poisoning, at the time the claims were made, was uncharacteristic; this was also the case in the vestibular symptoms. Chronic carbon monoxide poisoning in twelve cases showed a slowly increasing hearing loss in the higher frequency areas. This short analysis shows that otological vestibular and olfactory examinations, when corresponding manifestations of old age and previous noise exposure are critically examined, are essentially of help in the diagnosis of chronic carbon monoxide poisoning, and therefore should be considered in the diagnostic spectrum, especially in the initial consideration of claims.

F-3048

Reiter, R.
FIRST DEVELOPMENTAL STAGE OF A PHYSICAL MODEL OF THE RESPIRATORY TRACT AS A SIMULATOR OF RETENTION. [Erste Entwicklungsstufe eines physikalischen Atemtraktmodells als Retentionssimulator.] Translated from German. Aerosol Forschung, 13(2):133-156, June 1966. 45 refs.

An instrument is described which supplies specific data on questions regarding the biological danger of a given, arbitrarily homogeneous, aerosol or dust, with respect to the retention of the particle in the different stages of the respiratory tract. It involves the following four stages corresponding to various parts of the respiratory tract: retention in the upper respiratory tract (excluding mouth and nose); retention in the bronchial tract; retention in the alveolar duct; and amount breathed out again. Because of their radioactivity, the particles in the four stages can be analyzed for amount and composition gravimetrically, chemically, spectrophotometrically, or by any other suitable method. The electric charge given off by the particles is continually recorded. The instrument is supposed to work for particle diameters from 0.01 to 8 nm after it is completely developed. It is primarily designed for population protection, but may also serve in the general area of air-pollution problems.

F-3211

Inagaki, Y.
ON EXPERIMENTAL ANTHRACOSIS, ANTHRASILICOSIS AND THE RELATIONSHIP BETWEEN THESE DISEASES AND PULMONARY TUBERCULOSIS IN COMPLICATION THEREWITH. Translated from Japanese. Jap. J. Indust. Health, 1(1):41-59, Feb. 1959. 44 refs.

Rabbits were made to inhale coal dust from Sakito Mine, Kyushu, and coal dust mixed with an equivalent quantity of the bed rock dust of the colliery in order to cause experimental anthracosis and anthraco-silicosis in them, for comparative study of pathological pictures. Next, the test rabbits were inoculated with low virulent bovine tuberculous bacilli to cause concurrent lung tuberculosis. The influence of anthracosis and anthraco-silicosis on complicated pulmonary tuberculosis was investigated. From the results of the experiments it may be concluded that even coal dust, devoid of the effect of causing proliferation of fibres or anthracosis, aggravates the tuberculous changes occurring from complications, but this effect of coal dust is weaker than that of coal dust mixed with silicate dust.

F-3214

Japan. Ministry of Health and Welfare
REPORT ON THE RESULTS OF INVESTIGATION OF THE EFFECTS OF AUTOMOBILE EXHAUST ON THE HUMAN BODY. Translated from Japanese. Kuki Seijo Japan. Air Cleaning Assoc. (Tokyo), 4(1):39-43, 1966.

The measurement of CO, soot, nitrogen oxides, SO_2, SO_3, and hydrocarbons and their medical psychological effects on the human body were investigated in September 1965 in two regions with contrasting amounts of daily traffic. A quiet region to be considered was the vicinity of Ohara-Machi Setagagya-ku, Tokyo, and the other was in the vicinity of the National Hygienic Laboratory at Yoga-cho Setagaya-ku, Tokyo. The results are stated categorically for each air pollutant. To determine environmental effects, meteorological data were supplied by Tokyo District Central Meteorological Observatory.

F-3224

Raymond, V. and R. Nussbaum
ON CEMENT-PLANT DUST AND ITS EFFECTS ON MAN, PLANTS, AND ANIMALS. [A propos des poussieres de cimenteries et de leurs effets sur l'homme, les plantes et les animaux.] Translated from French. Pollution Atmospherique, 8(31):284-294, July-Sept. 1966. 39 refs.

A summary is given of the principles of cement manufacture during which dust is produced (consisting of fine powders of partially decarbonated calcium carbonate, silicates, and sulfates) and the studies of the dust's effects on plants (little importance with respect to wild animals). Lung diseases, bronchitis, and emphysema have been noted among cement workers, but negative results were obtained from the rare studies of the neighboring population of cement works. The paper is a summary of classical information in the field. (Authors' summary)

F-3239

Tsutomu, Umezawa
AUTOMOBILE EXHAUST AND HEALTH IMPAIRMENT. Translated from Japanese. Kuki Seijo [J. Air Cleaning Assoc.] (Tokyo), 3(6):28-33, March 1966.

A list of physical, psychological, and nervous systems of exhaust gas poisoning compiled by a committee on exhaust of the Sanitation Association of Japanese Industry is given . The HbCo (carboxyhemoglobin) in the human blood and CO concentration in the air were measured at two intersections in Tokyo to determine their relation. Methods of determining the danger level of CO in the air and in human blood are discussed. The composition of CO, SO_2, and SO_3 and organic substances in the automobile exhaust from two types of Japanese cars, ISUZU BERERU 2000, and NISSAN DATSUN with the gasoline 'Mobil Special' is determined at different speeds and with different gears.

F-3704

Jerzykowski, Tadeusz and Stanislaw Nowak
THE EFFECT OF ACUTE CARBON MONOXIDE POISONING ON THE RIBOFLAVIN LEVEL IN BLOOD AND TISSUES. [Wplyw ostrego zatrucia tlenkiem wegla na poziom ryboflawiny we krwi i tkankach.] Translated from Polish. Acta Physiologica Polonica, 14(1):115-126, 1963. 22 refs.

In the course of investigations of the effect of various substances, components of the respiratory enzymes, on carbon monoxide poisoning and other forms of anoxia, an interest was taken in the biochemical alterations accompanying hypoxia. Some reports indicate that the blood level of riboflavin (vitamin B_2) is lowered in rabbits subjected to acute carbon monoxide poisoning. The aim of the present work was to perform more detailed analyses. The investigations were carried out on 23 white rats and 27 rabbits. Riboflavin was supplied in a concentration of 3 mg percent during three days before the experiment. The animals were poisoned in a special chamber by a mixture of carbon monoxide with air. The contents of the vitamin B_2 in the muscles and liver were estimated fluorimetrically. Riboflavin in blood was also determined. As the result of experiments the following average standard values of total riboflavin were recorded: in rabbits - blood 21 gamma percent, muscles 199 gamma percent, liver 960 gamma percent; in rats - muscles 393 gamma percent, and liver 1313 gamma percent. Acute carbon monoxide poisoning in rabbits brings about a statistically significant decrease in total riboflavin in muscles (by 25 percent). No similar changes in the liver of poisoned rabbits were observed. On the contrary, the acute poisoning evokes in rats no significant differences in the riboflavin concentration of liver and muscle tissues. The changes of riboflavin concentration in the muscles and blood of rabbits are connected with the general stress effect of carbon monoxide poisoning.

F-3705

Grudzinska, Barbara
ENCEPHALOGRAPHIC PATTERNS IN CASES OF CHRONIC EXPOSURE TO CARBON MONOXIDE IN AIR. [Obraz elektroencefalograficzny w przypadkach przewleklej ekspozycji na male stezenia tlenku wegla w powietrzu.] Translated from polish. Folia Medica Cracoviensia, 5(3):493-515, 1963. 50 refs.

Neurological tests and the EEG method have shown that exposure to low concentration of CO are not responsible for extensive damage to the central nervous system. It is, however, possible that chronic exposure to CO has a retarding influence on the bioelectric activity of the brain tissue, manifested in clinical pattern as the neurasthenic syndrome. EEG tracing with inhibitory effect on bioelectric activity frequently found in cases of chronic exposure to CO occurs in some physiological phases of healthy individuals, particularly in various types of neuroses and pseudo-neuroses, and is not a unique characteristic of carbon monoxide. EEG examinations in cases of chronic exposure to CO may be of value as a means to control the existence of harmful conditions in considering large groups of exposed individuals. In single instances, EEG examination alone cannot be considered as decisive.

F-3848

Toyama, Toshio
STUDIES ON AEROSOLS: SYNERGISTIC RESPONSE OF THE PULMONARY AIRWAY RESISTANCE ON INHALING SODIUM CHLORIDE AEROSOLS AND SO_2 IN MAN. Translated from Japanese. Sangyo Igaku, 4(2):18-24, Feb. 1962. 26 refs.

While inhalation of sodium chloride aerosols showed no irritating response in all the cases, SO_2 gas induced remarkable increases of airway resistance in a study calculating the pulmonary air flow resistances in 13 healthy male adults. Alveolar pressure and the flow rate in and out the airway were measured by the interruption technique, and pneumotachometry and responses were compared after 5-min inhalations of submicronic NaCl aerosols, SO_2 in concentrations of 1.6-56.0 ppm, and an SO_2-aerosol mixture. Monodisperse saline aerosols with CMD 0.22 microns were generated from 2 percent NaCl solution through a Dautrebande D30 device, and SO_2 inhaled was ejected from the iron pressure tube through a capillary rotameter to obtain constant concentration. The enhanced response to SO_2 gas was 2 to 50 percent above the pre-experimental control value. When the SO_2-aerosol mixture was inhaled, the percentage response change increased synergistically, showing 20 to 80 percent above the control value. A hypothetical explanation on the synergism may be made by La Belle's theory which involves pulmonary penetration of particles and gas in terms of size and Henry's constant. (Author's summary modified)

F-3903

Kiyoo, Matsui, Hiroshi Sakamoto, Tetsuji Kojima, and Akitaka Inada
A SYMPTOM-COMPLEX DUE TO INHALATION OF CASTOR BEAN DUST. Translated from Japanese. Jap. J. Indust. Health, 4(11):23-30, Nov. 1962.

Acute conjunctival congestion, chill, fever, leucocytosis with neutrophilia, albuminuria and excessive urobilinogen in the urine have occurred as acute ricin intoxication by inhalation of castor bean dusts, and expiratory dyspnea and cough have occurred by allergen inhalation after the sensitization in workers exposed for a long period to the dusts. Some workers in an oil mill complained of acute conjunctival congestion, rhinorrhea and chill, as prodrome, from 30 min. to 3 hr after the exposure to castor bean dusts; then they suffered from arthralgia and headaches with fever, cough, and sputum. Those who were exposed for short terms were attacked strongly with conjunctival congestion, rhinorrhea, chill and fever, while workers exposed for long terms were attacked mainly with expiratory dyspnea and cough. During exposure to the dust, leucocytosis with neutrophilia, albuminuria, and excessive urobilinogen excretion in the urine were detected in many cases. Antibodies for allergen and promoting action to the hemagglutination by ricin were also detected in the serum of the workers. A month after the exposure, the tendency to an increase of eosinophils was observed. The rectal temperature rose an hour after the intramuscular injection of crude pomade extract or ricin in an experiment using rats. Twenty-four hours after the injection, congestion and hypertrophy of liver, kidney, and spleen, and lung congestion and hemorrhage, brain, digestive canal, peritoneum, genital glands, and adrenal glands were observed by dissection. Precipitation for the respective fraction was positive in the serum of sensitized rats with ricin or allergen fraction. The ricin sensitized serum of the rats inhibited hemagglutination by ricin. (Authors' summary modified)

F-4204

Tomono, Yoshiro
EFFECTS OF SULFUR DIOXIDE ON HUMAN PULMONARY FUNCTIONS. Translated from Japanese. Japan J. Indust. Health, 3(2):77-85, Feb. 1961.

The 46 healthy males, who were subjected to the inhalation of 1-45 ppm SO_2 gas for 10 min through a mask from a high-efficiency gas changer, did not show any symptoms of poisoning except for a few persons after inhaling 1-5 ppm of the gas. Changes of clinical symptoms, respiration rate, pulse rate, vital capacity, 0.5-sec expiratory capacity, and Wright's expiratory peak flow rate were measured for all subjects. When exposed to 10-30 ppm SO_2 gas, all subjects experienced a sense of burning of the upper respiratory tract, coughing, chest tightness, and in several persons moist rales in the chest were heard. A slight increase of pulse and respiration rate was observed in about 10 percent of the subjects with no proportional relation to the concentration of SO_2. The 0/5-sec expiratory capacity and Wright's peak flow rate showed a linear decrease in proportion to the increase of SO_2 concentration, that is, a decrease by 10 percent in 10 ppm and by 15 percent in 40 ppm. It was notable that the vital capacity remained constant. The lowest limit of SO_2 concentration which induced the bronchoconstriction was about 1.6 ppm. Within 10 min after the inhalation of the gas, the physiological changes returned to the pre-inhalation level. When 15-41 ppm of SO_2 were inhaled several times for 10 min, the bronchial response tended to lessen and the subjects seemed to become accustomed to the SO_2. When the subjects inhaled using the bronchodilator (isoproterenol hydrochloride) aerosols, the constriction of the bronchi resulting from SO_2 was immediately released and no constriction by repeated SO_2 inhalation occurred. (Author's summary, modified)

F-5749

Pavoni, Pietro and Luciano Semprebene
RADIOISOTOPES IN THE STUDY OF PULMONARY RESPIRATORY FUNCTION. [Radioisotopi nello studio della funzione respiratoria polmonare.] Translated from Italian. Recenti Progressi in Medicina, 37(1):1-46, July 1964.

A critical review of current methods perfected for the study of the pulmonary respiratory function through radioisotopes is presented. It was concluded that: (1) these methods facilitate the separate investigation of the 3 elementary processes of ventilation, perfusion, and diffusion; (2) the radioisotope methods are divided into two groups: the first group employs the in vitro count of samples of expired air; this method offers great precision and is of tremendous interest in the field of experimental physiology; a second group employs in vivo counts from outside the body; this method offers a lesser degree of precision but it is extremely practical; this group is definitely highly useful in the field of clinical practice. (3) the radioisotope techniques, compared to the conventional methods, offer substantial advantages: they are less laborious; they are reproducible, given the lesser degree of inconvenience for the patient, even after a short time; they correspond completely under experimental conditions to the normal physiological mechanism; and they are more sensitive to even minimum functional variations. (4) The study of the pulmonary respiratory function with radioisotopes should still be considered in the development phase; broader and more reliable improvements are certainly possible.

F-5855

Jedrychowski, Wieslaw, Jan Kus, Jozef Pietrowski, and Bohdan Sawicki
GLYCOGEN CONTENT OF LIVER OF RATS IN CASE OF POISONING BY CARBON MONOXIDE. [Zawartosc glikogenu w watrobie przy zatruciu tlenkiem wegla.] Translated from Polish. Folia Medica Cracoviensia, 7(3):437-442, 1965. 5 refs.

This study compares the degree of disturbances of carbohydrates under the effects of carbon monoxide after administration of large doses of adrenalin. The evaluation was made on the basis of the behavior of liver glycogen in rats, while considering the condition and content of liver glycogen is a sensitive index of the activity of the cell on the one hand and of the processes of glycogenolysis and neoglycogenesis on the other hand. The experiments were carried out on 36 hooded rats of both sexes, weighing 120 to 150 g. When the animals were killed and their diaphragm opened, small segments of their liver were studied. Lumps of liver were fixed for 24 hours in Rossman gas at 0° C and immersed in blocks of paraffin. This method makes it possible to observe accurately the size and quantity of the grains of glycogen and its location in the liver lobe. The results show that as a result of the effects of carbon monoxide there is intensive glycogenolysis in the liver tissue. During the first stage the glycogenolysis affects the periportal area and later the central part of the liver lobe. Hypoxia in combination with the blocking of the activity of respiratory enzymes can cause a switch of the pH center inside the cells in the direction of fermentation and hydrolytic decomposition of glycogen. When conceived in this way, glycogenolysis would be an expression of direct damaging of the metabolism of the liver cell.

F-5875

Jedrychowski, Wieslaw, Jan Kus, Jozef Pietrowski, and Bohdan Sawicki
CYTOCHROME OXIDASE AND PEROXIDASE ACTIVITIES IN THE LIVER OF RATS IN EXPERIMENTAL ACUTE POISONING BY CARBON MONOXIDE. [Zachowanie sie aktywnosci oksydazy cytochromowej i peroksydazy w watrobie szczura w doswiadczalnym ostrym zatruciu tlenkiem wegla.] Translated from Polish. Folia Medica Cracoviensia, 7(3):429-442, 1965. 12 refs.

The purpose of this study was an investigation by means of histochemical methods of the influence of CO on the activity of cellular oxide reducing enzymes in experimental acute poisoning by carbon monoxide. Liver was selected because liver tissue is one of the animal tissues which is very rich in enzymes, and its parenchyma is considered to be homogenous both biochemically as well as histologically. Fresh fragments of the liver tissue were frozen and strips of 75 microns were used for a Nadi's indophenolic reaction, and 40-micron strips were used for a benzidine reaction. It was established that indophenolic reaction was strongly blocked in strips of liver of rats which have been subject to the effects of carbon monoxide. In six poisoned rats there was no reaction at all, which would indicate that the enzyme was completely blocked. In 12 animals the activity of the enzyme was evaluated as poor, and in two it was evaluated as medium or strong. Benzidine reaction in liver lobes of a rat shows a rather even distribution both in the center as well as on the periphery. In the liver of rats poisoned by CO the intensity of the reaction is clearly poorer. Only in one case there was no benzidine reaction, which may indicate that peroxidase was completely inactivated. From the results of the studies which are included it is concluded that the activity of both enzymes under study in acute poisoning by CO is heavily blocked. The period during which the animals were kept in an atmosphere of carbon monoxide was very short and lasted from two to three minutes. The short duration of the activity of CO in combination with the results obtained from histochemical studies shows that in the course of poisoning by carbon monoxide rapid changes occur in the oxide reduction system of a liver cell. The results compiled show that cytochrome oxidase is subject to a stronger blocking than peroxidase. A considerable decrease of the activity of cytochrome oxidase is extremely important for an explanation of the pathogenesis of poisoning by carbon monoxide, because the enzyme is responsible for the terminal linkage of tissue combustion, i.e. for the transmission of electrons from the substratum to oxygen. The discontinuation of the linkage of the tissue combustion must intensify the condition of inadequate tissue oxidation caused by the anoxemic effects of CO.

F-6227

Coscia, G. C., G. Perrelli, P. C. Gaido, and F. Capellaro
BEHAVIOR OF GLUTATHIONE, STABLE GLUTATHIONE AND GLUCOSE-6-PHOSPHATE DEHYDROGENASE IN SUBJECTS EXPOSED TO CHRONIC INHALATION OF CARBON MONOXIDE. [Il comportamento del glutatione, del glutatione stabile e della glucosio-6-fosfato-deidrogenasi in soggetti esposti ad inalazione cronica d'ossido di carbonio.] Translated from Italian. Rassegna di Medicina Industriale e di Igiene del Lavoro, Vol. 33, p. 446-451, May-Aug. 1964. 29 refs.

The behavior of glutathione and glucose-6-phosphate dehydrogenase of red blood cells was studied to ascertain the possible toxicity of carbon monoxide for these systems. Nineteen men, employed in a plant producing illuminating gas, who had undergone supraliminal inhalations of carbon monoxide were examined. In six subjects with carboxyhemoglobin above normal, a decrease in the glutathione ratio was found, while the glucose-6-phosphate dehydrogenase decreased. However, comparison of the average values obtained with those of a group of normal subjects did not show any statistically significant differences.

F-6228

Datsenko, I. I.
DISTURBANCE OF CARBOHYDRATE METABOLISM IN EXPERIMENTAL POISONING WITH CARBON MONOXIDE. [Narushenie uglevodnogo obmena pri intoksikatsii okis'yu ugleroda v eksperimente.] Translated from Russian. Gigiena i Sanitariya, 30(5):30-34, 1965. 5 refs.

The effect of chronic exposure to CO at varying concentrations on carbohydrate metabolism was studied in guinea pigs and rabbits. Fasting blood sugars were determined monthly. The assimilation of carbohydrates was tested by the "loading method" using 1.7 gm glucose, 1.5 units insulin, and 0.37 ml (1:1000) adrenalin per kg body weight. Throughout the experiment the animals were fed normally. Prolonged exposure to CO led to disturbances in carbohydrate metabolism as shown by an increased rise of glycemic curves, and occasional distortion. The chronic effect of CO concentrations of 0.012-0.018 mg/l on guinea pigs indicates a need to reduce the maximum permissible concentration of this gas in the air.

F-6842

Yesipova, I. K.
CHRONIC BRONCHITIS AND PULMONARY EMPHYSEMA. Translated from Russian. Arkh. Pat., Vol. 26, p. 3-18, 1964. 102 refs.

Chronic bronchitis was defined by the 1962 European Symposium of WHO in Moscow as the chronic and recurrent generalized irritation or inflamation of the smaller bronchi, characterized by the increased formation of sputum continuing for at least three months within a two year period. The disease, as understood by this definition, is examined in detail and its relationship with pulmonary emphysema is analyzed. The work of other researchers in this field is reviewed. The major topics discussed include the following: the etiology of chronic bronchitis, touching upon bacterial and viral agents and smoking; the hypersecretion of mucus and its effect on the structure of the bronchi; post mortem lung studies; the effects of chronic bronchitis on pulmonary arteries; criteria for defining emphysema; etiology of emphysema and studies of lung pathology with an improved lung fixation technique; the effects of emphysema on the structure of bronchioles and alveoli; the characterization of centrilobular and panacinar emphysema; emphysema and hypertension in pulmonary vessels and hypertrophy of the heart; frequency of emphysema in old age; and lobar emphysema of newborn and small children. It is concluded that chronic bronchitis must be distinguished from secondary focal lesions of the bronchial tree, which occur as a result of suppuration or diffusion of a process from the focal bronchiectases. Chronic bronchitis and especially bronchiolitis, as well as the disturbance of the secretory and motor function of the bronchi and bronchioles brings with it a disturbance of pulmonary ventilation and the development of emphysema which might be panalobular or centrilobular, depending upon the caliber of the injured bronchi.

F-7096

Poche, Reinhard, Otfrid Mittmann, and Oswald Kneller
STATISTICAL INVESTIGATION OF BRONCHIAL CARCINOMA IN NORTH-RHINE-WESTPHALIA. [Statistische Untersuchungen ueber das Bronchialcarcinom in Nordrhein-Westfalen.] Translated from German. Zeitschrift für Krebsforschung, No. 66, p. 250-262, 1964. 23 refs.

Investigations were carried out using 1229 questionnaires, more than 20,000 autopsies (including 1807 cases of bronchial carcinoma), and the material of the general population statistics of Nordrhein-Westfalen as well as of Denmark, Norway, Belgium, Holland, Austria, and Switzerland. Since the beginning of this century, bronchial carcinoma found during autopsies in the pathological Institutes at Dusseldorf, Bonn, and Solingen has increased in relation to the general population statistics. The increase of bronchial carcinoma found in autopsies is noticeable in all age groups and is highest for men immediately before age 60. The percentage of bronchial carcinoma found during autopsy corresponds to the concept of "relative mortality from bronchial carcinoma" in general population statistics. The range of the age maximum of absolute mortality from bronchial carcinoma, however, has not remained constant over the years; it moves like a "wave" through the age groups where heavy smoking of cigarettes first assumed the epidemic proportions of a mass addiction. However, it will be found from the data of the general population statistics of Switzerland that the displacement of the maximum of absolute mortality from lung cancer to increasingly higher age groups had already begun prior to the First World War. The explanation of this "wave" is not difficult if in addition to the absolute mortality from bronchial carcinoma, the relative mortality from bronchial carcinoma and the total mortality are taken into account. The correlation between these three parameters is explained by a simple numerical example. Statistical correlation analyses of various parameters are included.

F-7193

Truhaut, R., C. Boudene, and J. R. Claude
RESEARCH ON THE EFFECTS ON THE RABBIT AND THE RAT FROM PROLONGED EXPOSURE TO LOW CONCENTRATIONS OF CARBON MONOXIDE. I. STUDY OF THE CYCLE OF FIXATION AND ELIMINATION OF THE TOXIC SUBSTANCE. A DISCUSSION OF THE THEORY OF THE PERSISTENCE OF CARBON MONOXIDE IN THE BLOOD. [Recherches sur les effects de l'exposition prolongee du lapin et du rat a de tres faibles concentrations d'oxyde de carbone. I. Etude du rythme de fixation et d'elimination du toxique. discussion de la notion de remanence de l'oxyde de carbone dans le sang.] Translated from French. Arch. Maladies. Profess. Med. Trav. Securite Sociale (Paris), 28(3):341-356, March 1967.

This study was made to determine whether carbon monoxide has a cumulative effect and whether there is a persistence of carbon monoxide in the blood of animals with chronic poisoning. The carboxyhemoglobin was followed in rabbits and rats with exposures to 100 ppm of carbon monoxide in an exposure chamber. The animals were exposed for 2500 hr at a rate of 8 hr per day for 5 days per week. Periods of rest, one for 15 days and another of 1 month were interposed at 500 and 1500 hr. There was no residual carbon monoxide in the blood of animals who had been chronically poisoned. The kinetics of the fixation and elimination of carbon monoxide follows a simple physiological phenomenon. The results agree with work by others that carbon monoxide is absorbed and eliminated without change and without any storage except in the blood. The value of carboxyhemoglobin in the plasma is very low. Animals exposed for 500 hr to 250 ppm of CO after a previous exposure of 2500 hr to 100 ppm showed the same poisoning as animals who had not received the first exposure. It is concluded that there was no cumulative effect or persistence in the blood of carbon monoxide after long exposure to low concentrations of carbon monoxide.

F-7212

Petrilli, F. L. and S. Kanitz
PRELIMINARY RESULTS OF THE EPIDEMIOLOGICAL RESEARCH IN GENOA DEALING WITH AIR POLLUTION AND ITS RELATION TO INDICES OF RESPIRATORY FUNCTION. [Risultati Preliminari di Ricerche Epidemiologiche sui Rapporti fra Inquinamento dell' Aria ed Indici di Funzionalita dell'Apparato Respiratorio a Genova.] Translated from Italian. Giorn. Igiene Med. Prevent. (Genoa), 7(3):205-220, Sept. 1966.

Research carried out in Genoa deals with the effects of air pollution on the respiratory system and on some indices of respiratory function. The studies were made on elementary school children living in two zones with different levels of such pollutants as sulfur dioxide, suspended particles, and deposited matter. The statistics show that the children living in the more polluted zone had longer and more frequent episodes of bronchitis as well as rhinitis, cough, and phlegm. A decrease in the peak respiratory flow (Wright) was observed. The seasonal course of these syndromes was followed. The results show that these indices persist during the hotter months if there is no decrease in air pollution, whereas other respiratory ailments that had no correlation to air pollution showed similar seasonal curves in the two zones, even though the absolute values of these indices were different.

F-7240

Petr, B. and P. Schmidt
THE INFLUENCE OF THE ATMOSPHERE CONTAMINATED BY SULFUR DIOXIDE AND NITROUS GASES ON THE HEALTH OF CHILDREN. [Der Einfluss der durch Schwefeldioxid und nitrose Gase verunreinigten Atmosphäre auf den Gesundheitszustand der Kinder.] Translated from German. Z. Ges Hyg. Grenzg. (Berlin), 13:(1):34-38, Jan. 1967.

Evidence that sulfur dioxide and nitrous gases which are effective in low concentrations also produce changes in the individual indicators of group diagnostics is demonstrated. Differentiation was made between effects on control groups and the group from the polluted atmosphere as well as between the influence of both the combined effect of sulfur dioxide and nitrogen peroxide and the effect of sulfur dioxide alone. The method of the erythrogram is also described. This method is based on the increase of the number of erythrocytes in children living in air-polluted areas. The methemoglobin level in the blood of children is significantly increased by the air pollution caused by nitrogen peroxide in the surroundings of large chemical works. Thus, another possible cause of the development of latent methemoglobinemia in school children between the ages of 8 to 10 is explained. (Authors' summary, modified)

F-7532

Ishido, Shozaburo
STUDY OF AIR QUALITY IN BUILDINGS, I. RELATION BETWEEN DEGREE OF WEARINESS, CONCENTRATION OF CO_2, AND POLLUTED ENVIRONMENT. Text in Japanese. J. Japan Air Cleaning Assoc. (Tokyo), 3(3): 11-15, 1965.

The relationship between indoor CO_2 concentration and weariness was investigated. An examination was made of 30 people for three days. Ten were working in a part of the room where the CO_2 concentration was low (0.14-0.17%) and 20 in a high-CO_2 section of the same room. The degree of weariness was defined by the "flicker value". Graphed results indicate that weariness is greater for people working under a higher CO_2 concentration than those working under a lower concentration. Also investigated was the relation between the CO_2 concentration and amount of ventilation required per person. The average value of CO_2 emitted by a person with an R.M.R. (Metabolic Ratio) value of 0.4 to 0.6 is about 18 liters/hr. The threshold limit value of CO_2 is 1.5 percent in Japan and 0.5 percent in the U.S. The most desirable value is less than 0.1 percent, which can be obtained by the ventilation of 10 cubic meters/hr per person. CO_2 values were measured in offices in winter when steam radiators are in operation. A graph indicates a maximum value of 0.32 percent. Other measurements made in 116 offices without air conditioners gave average values between 0.16 and 0.2 percent. Values appeared to be lower in summer than in winter. CO_2 concentrations in an apartment using a gas heating apparatus was measured at 0.66 percent.

F-7694

Komura, Setsuo
ELECTROENCEPHALOGRAPHIC STUDIES ON CARBON MONOXIDE POISONING IN RABBITS. Translated from Japanese. Japan J. Legal Med. (Tokyo), 21(1): 25-48, Jan. 1967. 71 refs.

Changes in behavior and in the EEG were observed in male rabbits exposed to carbon monoxide. Fast waves disappeared gradually and slow waves with spindle bursts appeared in the neocortex after the inhalation of pure CO gas. Later slow waves of distinct high voltages were demonstrated in the neocortex, especially in the limbic and optic areas, about 40 min. after contact with CO gas; at this time the serum CO-Hb concentration had reached 35 percent. Furthermore, low voltage slow waves with spindle bursts were demonstrated after 80 min., when the CO-Hb concentration was 55 percent. At this time the rabbits were still sensitive tc sound and to other stimuli. However, they could not walk. Slow waves appeared diffusely in the anterior and posterior hypothalamus, central nuclei of thalamus, midbrain reticular formation, amygdala, hippocampus, pallidum, caudate nucleus, corticospinal tract and internal capsule.

Increases of the threshold of the arousal reactions in the neocortex were examined after successive stimulations of the midbrain reticular formation, the central nuclei of the thalamus and the posterior hypothalamus. Almost no changes were shown in the midbrain reticular formation, and slight increases of threshold were demonstrated in the central nuclei of the thalamus and in posterior hypothalamus, about 40 min. after onset. The increases of threshold, however, were distinctly shown after 80 min. to be strongest in the posterior hypothalamus and the central nuclei of the thalamus and weakest in the midbrain reticular formation. Other findings are reported and it is concluded that CO caused disturbances in the limbic system, in the hypothalamic activating system, on motor function and on the visual pathway. Only slight disturbances were observed in areas related to consciousness.

F-7821

Gilgen, A. and H. U. Wanner
THE TOXICOLOGICAL AND HYGIENIC SIGNIFICANCE OF OZONE. [Die toxikologische und hygienische Bedeutung des Ozons.] Translated from German. Arch. Hyg. Bakteriol. (Munich), 150(1-2):62-78, 1966. 62 refs.

The toxicological and bactericidal properties of ozone are reviewed. The acute toxicity of ozone to laboratory animals is reported as being diverse and variable from species to species. Chronical exposure results in damage to the respiratory organs, i.e. in bronchitis and lung emphysema, limitation in weight increase of young animals, and reduced urine acidity. When man is exposed to 4 to 5 ppm, a lung edema develops within a few hours. Lower concentrations primarily affect respiration by irritation and cause headaches and nausea. In animals, the exposure to low ozone concentrations produces immunity to subsequently applied lethal doses. Tolerance to ozone has also been brought about by germanium oxide. Conversely, ozone has been shown to produce tolerance for ketene, H_2O_2 and NO_2. The mode by which ozone becomes biologically effective is not yet fully elucidated. Presumably, free radicals causing oxidation processes are formed similar to those produced by nuclear radiation. These processes, in turn, set free adrenalin, noradrenalin and bradykinin. The strongest bactericidal effects of ozone are obtained at high relative humidity and low temperature. In practice the germicidal effect of ozone can only be applied to sterilizing water. The deodorizing effect is generally accepted but requires concentrations exceeding the maximum allowable concentrations.

F-7824

Gwizdek, E. and S. Kochanowski
EFFECT OF MAGNESIUM OXIDE (MgO) VAPORS ON THE HUMAN ORGANISM IN INDUSTRY. [Influence des d'oxyde de magnesium (MgO) sur l'organisme humain dans l'industrie.] Translated from French. Arch. Maladies Profess. Med. Trav. Securite Sociale (Paris), 29(6):531-534, June 1967. (Presented at the Meeting of the Societe de Medecine et d'Hygiene du Travail de Strasbourg [Strasbourg Socidety of Medicine and Labor Hygiene], June 18, 1966.)

The effects of magnesium on the human were investigated by medical observations over a period of 12 years, air samples taken in a magnesium refinery, a study of the levels of magnesium in the body fluids as well as X-ray examinations. At the plant in question, magnesium is produced by calcination and reduction of dolomite ($CaCO_3$-$MgCO_3$) in an electric furnace under vacuum. Among 76 men in the magnesium plant, 28 (36.8 percent) complained of digestive disturbances of whom 18 (23.7 percent) had stomach ulcers. The incidence of stomach ulcers among other metallurgical workers as reported in the literature as well as in the plant is 3.5 percent. The highest concentration of MgO occurred during the operation and discharge of the reduction furnace and during the extraction of the condensation crucibles. The exposed men had an increase in urinary magnesium content of 115 percent, and an increase of serum MgO content of 123.6 to 140.5 percent as compared to those not exposed. The magnesium content of the blood and urine were the same before and after the working shift. Air samples showed concentrations from 0.050 to 0.116 mg of MgO per liter of air. A definite relation exists between an exposure to magnesium aerosols and fumes and the incidence of gastric and duodenal ulcers.

F-7942

Mammarella, Luigi
AEROSOLS AND AEROSOLIZATIONS. INHALATION - RETENTION - PLACES OF DEPOSITION ALONG THE RESPIRATORY TRACT - GENERATION PRINCIPLES OF AEROSOLS. [Aerosoli e aerosolizzazioni. Inalazione - Ritenzione - Luoghi di deposizione lungo l'apparato respiratorio - Principi di generazione di aerosoli.] Translated from Italian. Ann. Med. Navale (Rome), 72(1):67-82, Jan.-Feb. 1967. 41 refs.

The various aspects of inhalation and deposition of therapeutic aerosols along the respiratory tract are reviewed. For good deposition of the particles along the primary respiratory tract, i.e., trachea, bronchi, the particles should be 5-10 microns in diameter. However, to ensure a higher percentage of penetration and retention in the bronchioles and alveoli, the particles should preferably be less than a micron in diameter. For optimum therapeutic results, the aerosol should be monodispersed. Various devices for aerosol production are available. The production of a liquid aerosol can be accomplished by the following: atomization with a gaseous flow, by hydrodynamic atomization and by centrifugal atomization. Production of solid aerosols can be accomplished by pulverization and dispersion by air current, or by a controlled pulverization.

F-7999

Suzuki, T., K. Ishikawa, E. Yokoyama, H. Kita, H. Maeda, T. Toyama and K. Nakamura
PULMONAL-VENTILATORY CAPACITY OF SCHOOL CHILDREN IN A CITY EVALUATED BY WRIGHT'S PEAK FLOW RATE. Translated from Japanese. Japanese Journal of Industrial Health, 5(8): 13-18, Aug. 1963. 21 refs.

The relation between air pollution and pulmonary ventilatory functions was studied. The pulmonary-ventilatory functions of 1200 children in Tokyo and of 200 pupils in Amagasaki were examined from 1960-1962 by the Wright peak flow meter. As to the evaluation of air pollution, suspended particles were estimated by the tape air sampler method, and sulfur dioxide by the "lead peroxide" method. The investigation period in Tokyo was from November 1961 to March 1962. Wright peak flow value, breathing capacity by bitarometer, and 0.5 second amounts were measured in triplicate per person and the maximum value was taken. Peak flow value was measured once per month for a total of 5 times, and breathing capacity and 0.5 second amounts were measured once in March. The investigation in Amagasaki was from September 1960 to May 1961 and 4 measurements were conducted during the period in two month intervals. The degree of air pollution was expressed by the suspended particulate concentration index determined with a tape air sampler. The apparatus was placed near the school for measurement. Monthly checks on fallen dust concentration and SO were made in Amagasaki. The results showed a relationship between the index of suspended particles and peak flow rate. The higher the concentration of suspended particles the lower the peak flow rate. Variation in peak flow rate was large in areas of intermediate pollution and change in the degree of pollution agrees with that of peak flow rate. This is indicative of the relation between the prevention mechanism of the body and air pollution. Also these can be classified into a group of (1) high peak flow rate when the degree of pollution by index of suspended particles is small, (2) an intermediate peak flow rate when the degree of pollution is intermediate. These results indicate that a long term observation and group diagnosis instead of individual diagnosis is necessary when the influence of air pollution is judged by peak flow rate. Even when difference in SO concentration of 1.0 mg SO_3/day/100 cm^2 PBO_2 was observed, there was no difference in peak flow rate between the two districts.

F-8120

Khukhrina, Ye. V.
EVALUATION OF THE MODERN METHODS OF DETERMINATION OF THE AMOUNT AND DISPERSITY OF DUST. In: A. A. Letavet and Ye. V. Khukhrina (eds.), Methods of Studying Industrial Dust and the Incidence of Pneumoconioses. [Metody izucheniya proizvodstvennoy pyli i zabolevayemosti pnevmokoniozami.] Translated from Russian. Leningrad, Meditsina Publishing House, 1965, 123p. Joint Publications Research Service, Washington, D. C., p. 5-9, March 11, 1966.
CFSTI: TT66-30952

As an example of the relationship between the number of cases of pneumoconiosis and the level of contamination of the air with dust, a study was conducted on the health of sand blasters in the USSR during the years 1947-1950. Working conditions at different plants varied sharply, depending on the volume of work, the dimensions of the casting, the arrangement and state of the sandblasting chambers, and on the measures taken for individual protection. Only the composition of the dust inhaled by the workers, which contained 85-90 percent quartz particles remained the same. Parallel investigations affirmed the belief that the mass of the active dust establishes the level of the index of the number of cases of morbidity. The significance of the mass of the affecting dust was demonstrated in a specially conducted experimental work. Two series of experiments were set up with white rats into which quartz dust of various dispersity was introduced intratracheally. Consequently, it was affirmed that the especially active and dangerous quartz dust, with a particle size of less than 5 microns, did not cause the development of silicosis because the mass of the acting dust was insignificant. The experiments performed indicate the predominant significance of the mass of the acting dust, and especially the mass of the most finely divided dust. Here it is interesting to note that quartz dust consisting of several size fractions caused the development of a silicosis similar to the silicoses caused by the action of dust of higher fractions. Consequently it can be stated that in the multifraction dust the mass of fine particles was insignificant, since this dust fraction did not affect the character of the development of silicosis. Thus it is evident that the origination of silicosis is caused by the mass of the acting dust as well as by its fineness. At the present time, microscopic methods are still being used for the evaluation of the degree of dispersion of dust, but it must be borne in mind that the data obtained express the degree of dispersion with respect to the number of particles of various sizes, and not with respect to their mass.

F-8396

Zenji, Horai
STUDY OF THE EFFECTS OF POLLUTED AIR ON THE HUMAN BODY. [Taiki Osen no Jintai Oyobusu Eikyo ni Kansuru Kenkyu.] Translated from Japanese. 1964 Special project research by grant-in-aid for scientific research for the Ministry of Education (Report on the results of study, March 31, 1965), 202 p. 5 refs.

The chronic effects of polluted air on elderly residents of industrial and non-industrial areas of Japan were studied. The cities involved were Tokyo, Osaka, Northern Kyushu, Hiroshima, and Nara. Lung autopsy specimens were examined for coal dust accumulation, degree of fibrosis, and presence of emphysema from persons who had lived in the above-mentioned cities for forty years or more. Living, long-time residents of the areas were given x-ray, pulmonary function, and other examinations and were classified according to smoking habits, age, sex, and presence of cough and bronchitis. The data from these studies are tabulated and represent the work of 15 separate investigators. The amount of dust and soot in the air of these cities was also studied as well as some meteorological conditions. Results of the dust measurements indicated that Hiroshima and Nara had less pollution than the other cities. This coincided with the clinical findings which showed that the residents of the two lesser polluted areas had less accumulation of dust in the lungs, better ventilatory capacity, and a lower frequency of abnormal linear shadows on lung x-rays.

F-8499

Gualtierotti, R. and G. Ghini
ION AEROTHERAPY MODIFIES PULMONARY EDEMA RESULTING FROM OZONE. [L'aeroionoterapia modifica l'edema polmonare da ozono.] Translated from Italian. Arch. Med. Interna (Anselmi), 18(2):66-71, March-April 1966. 11 refs.

Results are compared for two groups of male white rats which were subjected to ozone intoxication. For 20 days before poisoning with ozone, one group was subjected for one hour daily to a stream of negative ions (measured by a galvanometer at a distance of 20 cm, 2 x 10^{10} ions/sec). Subsequent to exposure to ozone for 45 min., using a bell jar, two animals from each group were decapitated and examined. The relationship between the dry and wet weight of the lungs of each animal was analyzed. It is concluded that the negatively ionized air significantly reduced the edematous infiltration into the lungs caused by inhaling ozone. The negative ions were shown to stimulate the endocrine system and improve the general metabolism of the organism, probably as a result of enhanced utilization of oxygen at the cellular level.

F-8533

Biersteker, K.
AIR POLLUTION AND MAXIMAL FLOW RATES IN TEN ASTHMATIC CHILDREN IN ROTTERDAM. [Luchtverontreiniging en dagelijkse pneumometerwaarden bij tien astmatische kinderen in Rotterdam.] Translated from Dutch. T. Soc. Geneesk., Vol. 45, p. 841-844, 1967.
5 refs.

Ten children in Rotterdam with severe asthma were studied with the Wyss-Hadorn pneumometer to see whether the maximum flow rates were influenced by air pollution. The examination was made every day at school at 11 a.m. after the children had played outdoors for 15 minutes. Smoke and SO_2 were measured from 10:30 - 11:00 a.m. When the flow rates were grouped according to increasing SO_2 and smoke concentrations no systematic differences were found, except in one child. When the mean flow rates, as percentages of normal values, were grouped chronologically and compared with the solution curves, one dip was found on a day with SO_2 and smoke levels of approximately 800 and 300 $\mu g/m^3$. This day was also characterized by a temperature drop. The study illustrates how much one depends on meteorological variables to get experimental results. The question also rose during the study whether asthmatic children are the most sensitive group to register effects. It may well be that the children were fixed at such low flow rates, that they were not very sensitive to air pollution anymore. (Author's summary)

F-8565

Matysyak, V. G.
PECULIARITIES OF THE OVULATION CYCLE IN WHITE RATS UNDER THE EFFECT OF GASOLINE VAPORS. [Osobennosti estral'nogo tsikla belykh krys pri vozdeistvii parov benzina.] Translated from Russian. Akusherstvo i ginekol. (Moscow), 43(1):63, Jan. 1967.
3 refs.

Rats were exposed to gasoline vapors in a concentration of 5 mg/l for 1-1/2 months, and the ovulation cycle was determined by smears. It was found that out of a total of 16 rats the overall cycle became longer in 7, remained unchanged in 5, and became shorter in 4. The results showed that gasoline vapors considerably change the function of the ovaries, as manifested by changes in total cycle duration and by the prolongation of estrus. The mechanism seems to be complex.

F-8606

Effenberger, E.
STUDIES OF BLOOD COHb IN RESTING SUBJECTS AS A FUNCTION OF CO-LEVEL IN THE AIR. [Untervuchsungen über den COHb-Gehalt des Blutes in Abhängigkeit von der CO-Konzentration der Luft bei ruhenden Versuchspersonen.] Translated from German. Arch. Hyg. Bakteriol. (Munich), 15(5-6):455-474, Oct. 1967.
8 refs.

Increases in blood carboxyhemoglobin levels were determined by the modified Wolff method using 52 test subjects (29 women, 23 men age 17-46). All subjects inspired, while resting, CO-concentrations between 0.006 and 0.033 vol. percent for 3 hours. Data are graphed in 5 illustrative cases. Individual subjects show considerable differences in COHb levels, even under similar test conditions. Differences were also found between the COHb values calculated according to the methods of Forbes et al., and of Hatch. No dependency of the COHb level on respired volume of air could be detected. The direct relationship between CO content of exhaled air and blood COHb level is statistically significant. The range of values for a single subject was considerably narrower than for a group. The rough determination of blood COHb level, using CO level in expired air, appears to be a rapid and convenient method.

F-8626

Torelli, Giorgio
MECHANISM OF THE TOXIC ACTION OF CARBON MONOXIDE AND THE CONSEQUENT THERAPEUTIC PRINCIPLES. [Meccanismo dell'arione tossica da CO e principi terapeutici conseguenti.] Translated from Italian. Rassegna di Medicina Industriale è di Igiene del Lavoro, 33(3-4):458-464, May-Aug. 1964.
21 refs.

The toxic action of CO should be tracted back to anemic anoxia and to a more difficult yielding of the O_2 from the blood to the tissues by means of the Haldane effect. As a therapeutic aid, the administration of pure O_2 to the patient, whi is subjected to a high artificial hyperventilation, is indicated. Therapeutic intervention should be performed as early as possible, since anomia lesions occur in the first minutes of poisoning. (Author's summary)

F-8627

Rubino, Giovanni Francesco
HEMODYNAMIC MODIFICATIONS DURING ACUTE CARBON MONOXIDE POISONING. [Modificazioni emodinamiche durante l'intossicazione acuta da monossido di carbonio.] Translated from Italian. Rassegna di Medicina Industriale e di Igiene del Lavoro, 33 (3-4):268-274, May-Aug. 1964.

The results of research on hemodynamic modifications during experimental acute carbon monoxide poisoning and subsequent resuscitation in dogs are reported. An increase in the heart rate and a slight increase in the systemic pressure was observed. On the other hand, pressure in the pulmonary artery increased two or three times. A particular aspect of the autonomy of coronary circulation is pointed out and the hypothesis is advanced that the decreased O_2 alveolar tension is not as responsible for the pathogenesis of chronic pulmonary heart as the decreased O_2 content in the blood. (Author's summary)

F-8629

Desoille, H., G. Cremer, and C. Girard
ON THE SUBJECT OF A SUPPOSED CARBON MONOXIDE POISONING OF ENDOGENOUS ORIGIN IN DIABETICS. [Au sujet d'un pretendu oxycarbonisme d'origine endogène chez les diabetiques.] Translated from French. Archives des Maladies Professionnelles, de Medecine du Travail et du Securite Sociale, 26(12):625-630, Dec. 1965.

Carbon monoxide poisoning was studied in 47 diabetic and 15 normal subjects. No carbon monoxide poisoning modifications were found that could be correlated with a glycemic increase. The only correlation found was an increase in carbon monoxide poisoning in certain cases; it was always in relation to the smoking habits of the tested subjects. (Authors' summary)

F-8815

Prerovska, Ivana and Sona Drakova
THE CHRONIC EFFECT OF CARBON MONOXIDE ON BIOCHEMICAL CHANGES IN THE BLOOD SERUM WITH RESPECT TO ARTERIOSCLEROSIS. [Vliv chronickeho pusobeni kyslicniku uhelnateho na biochemicke zmeny v zeru vzhledem k ateroskleroze.] Translated from Czech. Pracovni Lekar. (Prague), 19(1):1-4, Jan. 1967. 22 refs.

A group of 50 healthy workers (aged 20-40) from a coal carbonization plant was examined. They had been exposed to fluctuating CO concentrations (up to 0.1 vol percent) for 3 to 20 years (10.5 years average). Serum cholesterol phospholipids, beta-lipoproteins, and total lipid levels were determined. With the exception of the phospholipids, which were somewhat higher, the levels did not deviate from those in a control group. It is concluded that chronic exposure to CO does not change the lipid spectrum and by itself does not induce arteriosclerotic changes.

F-8944

Meda, Eugenio
THE KINETICS OF A REACTION OF HUMAN HEMOGLOBIN WITH CARBON MONOXIDE. [Cinetica della reazione dell'emoglobin umana con l'ossido di carbonio.] Translated from Italian. Rassegna di Medicina Industriale e di Igiene del Lavoro, 33(3-4):292-295, May-Aug. 1964. 6 refs.

The results of studies on the kinetics of the reaction of human hemoglobin with carbon monoxide are presented. The results were obtained by employing the "interrupted flow" method. The effect of temperature on the kinetics was also studied, and an equation is presented for calculating the constant of velocity. (Author's summary)

F-8945

Siegenthaler, P. and G. Helle
ENDOGENOUS FORMATION OF CARBON MONOXIDE ASSOCIATED WITH THE DESTRUCTION OF ERYTHROCYTES. [Formation endogene de monoxyde de carbone associee a la destruction des erythrocytes.] Translated from French. Schweizerische Medizinische Wochenschrift, 95(43):1445-1446, 1965. 11 refs.

Previous studies of the endogenous production of carbon monoxide (CO) in man have shown that this substance is produced during hemoglobin catabolism by the reticuloendothelial system. An attempt was made to establish a relationship between various hemolytic states and increased production of CO, measured as carboxyhemoglobin (COHb) by two independent spectrophotometric procedures. The concentration of COHb in venous blood was found to be 0.30 ± 0.14 percent in normal individuals. In the presence of hemolysis, COHb values were found to be elevated (0.55 - 5.1 percent) in every instance. Thus, COHb appears to represent a measure of total erythrocyte destruction. Its determination can be of value for the assessment of hemolysis.

F-8995

Petr, B. and P. Schmidt
SOME NEW POSSIBILITIES FOR OBSERVING THE INFLUENCE ON CHILDREN OF THE CHANGE IN LIVING ENVIRONMENT. I. LYMPHOCYTE REACTION AND THE MONOCYTE. [Nektere nove moznosti sledovani vlivu zmeneneho zivotniho prostredi na detsky organismus. I. Lymfocytarni reakce a monocytogram.] Translated from Czech. Cesk. Pediat. (Prague), 21(6):502-504, 1966. 8 refs.

A total of 128 children (aged 8-10) from 3 Czechoslovak towns were examined (Bohdanec, Ohrazenice and Rosice). SO levels of 0.03-0.32 mg/m^3 and nitrogen oxides of 0.005-0.07 mg/m^3 were found in 2 towns; the other town with clean air was used as a control environment. The pollutants cause an increase in erythrocyte count as well as a change in their size. Lymphocyte count increased and monocyte proliferation decreased significantly in children from the polluted areas. The deviation of these indices from normal was more pronounced in children exposed to both SO_2 and nitrogen oxides than in children exposed to SO_2 alone.

F-8996

Petr, B. and P. Schmidt
SOME NEW POSSIBILITIES FOR OBSERVING THE INFLUENCE ON CHILDREN OF THE CHANGE IN LIVING ENVIRONMENT. II. ERYTHROGRAMS AND METHEMOGLOBIN IN THE BLOOD. [Nektere nove moznosti sledovani vlivu zmeneneho zivotniho prostredi na detsky organismus. II. Erytrogram a methemoglobin v krvi.] Translated from Czech. Cesk. Pediat. (Prague), 21(6):505-508, 1966. 4 refs.

Children living in the vicinity of chemical plants emitting SO_2 and nitrogen oxide were examined using two nonroutine methods, erythrogram and methemoglobin content. Methodology was explained in a previous paper. The erythrogram records the kinetics of hemolysis in hydrochloric acid and serves as a measure of the resistance of erythrocytes. Both the erythrogram and the methemoglobin level differed significantly in children from polluted areas, compared to children in a clean environment. The air pollution apparently causes an increase in the number of immature erythrocytes. The effects of SO_2 and nitrogen oxides are additive. Methemoglobin content of children exposed to nitrogen oxide alone was considerably higher than in the controls, which may explain the development of methemoglobinemia in school children.

F-9000

Schmidt, P., B. Patre, and V. Picko
LEUKOCYTE TEST INDICES AND THE CONDITION OF TONSILS AND LYMPH NODES IN THE THROAT AS DIAGNOSTIC CRITERIA FOR SUBTLE CHANGES IN THE HEART OF CHILDREN. [Indexy bile krevni rady a stav tonzil a krcnich miznich uzlin jako diagnosticka kriteria jemnych zmen detskeho organismu.] Translated from Czech. Cesk. Hyg. (Prague), 11(8):473-478, 1966. 6 refs.

Groups of about 100 children from 2 Czechoslovak industrial areas with high air pollution (Asti nad Labem and Most) and a control group from a rural area with low air pollution (Zatec) were examined. Leukocyte count and the conditions of the tonsils and the lymph nodes were noted. Boys and girls from polluted areas have fewer lymphocytes, more polymorphonuclear neutrophil leukocytes, and lower levels of proliferation and monocyte differentiation than children from clean areas. Children from polluted areas also exhibited hypertrophic tonsils with lesions and enlarged lymph nodes. The lymphocyte and leukocyte values do not and should not be correlated with the state of the lymphatic nodes.

F-9003

Symon, Karel, Blahoslav Petr, and Vladimir Kapalin
THE EFFECT OF AIR POLLUTION WITH NOXIOUS GASES ON THE HEALTH OF CHILDREN. [Vliv znecisteni ovzdusi plynnymi skodlivinami na zdravotni stav detske populace.] Translated from Czech. Prakt. Lekar. (Prague), 46(1):19-22, 1966.

Several groups of children (8-11 years) from areas near thermal power plants, open pit coal mines, and chemical plants with high SO_2 and fly ash concentrations were examined and compared with control groups from rural areas with low air pollution. The results showed significantly higher erythrocyte count accompanied by a lowering of the blood color index. Globulin level was higher and albumin level lower in the blood serum of children from areas with air pollution. Due to the lack of ultraviolet radiation in the areas with air pollution, serum alkaline phosphatase levels were raised. Children from areas with smoke pollution also exhibited moderate growth retardation. These changes demonstrate the negative effects of industrial emissions on the human organism.

F-9004

Symon, Karel, Vladislav Kapalin, Olga Absolonova, and Ludmila Moudra
STUDY OF THE INFLUENCE OF AIR POLLUTION ON THE HEALTH OF CHILDREN IN BEROUN AND KRALUV DVUR. [Studium vlivu znecisteni ovzdusi v Beroune a Kralove Dvore na zdravotni stav deti.] Translated from Czech. Cesk Hyg. (Prague), 5(2/3):88-99, 1960.

Children (aged 2-13) were examined for 2 years in two Czechoslovak cities (Veroun and Kraluv Dvur) where air pollution from smoke of cement factories and ore processing plants is high (exceeding 1000 tons/km^2/yr. Growth, erythrocyte count, hemoglobin level, alkaline phosphatase count, albumin/globulin ratio, protein levels, and blood color were measured and compared with normal levels. The air pollution definitely affects the children's health, seen in the higher incidence of diseases, as well as in the deviation of the studied parameters from normal values. These parameters are suggested for use in health studies of areas with air pollution. The results of this study are used as a convincing argument for the implementation of air pollution control measures.

F-9013

Beukering, J. A. Van
THE OCCURRENCE OF PNEUMONIA AMONG MINERS IN AN IRON MINE AND A MANGANESE ORE MINE IN SOUTH AFRICA. [Het voorkomen van pneumonie bij mijnwerkers in een ijzermijn en een mangaanertsmijn in Zuid-Afrika.] Translated from Dutch. Ned. T. Geneesk., 110(10):473-474, March 1966.

A comparative study was made on the morbidity of pneumonia among miners in a manganese ore mine and an iron mine located in the same region. The statistics showed that the chance of pneumonia was greater in the manganese ore mines than in the iron mine. No cases of chronic manganese poisoning were observed. (Author's summary)

F-9014

Schaetzle, P., B. Nussbaumer, and H. Brandenberger
POLLUTION OF THE ATMOSPHERE BY MOTOR VEHICLE GASES. CHEMICAL AND MEDICAL STUDIES IN THE CITY OF ZURICH BETWEEN 1961 and 1962. [Die Luftverunreinigung durch Motorfahrzeugabgase.] Translated from German. Zeitschrift für Präventivmedizin, 10(5):367-385, 1965.

The carbon monoxide content of the atmosphere was measured at nine high-traffic-density street intersections in the City of Zurich during 1961 and 1962 during rush hours. The 125 measurements indicated that the mean carbon monoxide concentration is 30-40 ppm. This carbon monoxide concentration is well below the MAK-value of 100 ppm. Occasionally, mean values of 80-90 ppm were measured at the intersection of Raemi Street and Zeltweg, with temporary peaks of 95-120 ppm. These high values were clearly attributable to slow traffic, traffic blockages, and, especially to stationary vehicles with running engines that emitted considerable quantities of exhaust gas. The results of carboxyhemoglobin content determinations in the blood of 71 traffic police officers showed clearly that they must be separated into groups of smokers and nonsmokers, respectively. The smokers exhibit high carboxyhemoglobin contents, especially at the beginning of the duty term. In such persons, we found consistently values as high as over 5%, whereas the mean values for the nonsmokers were around 3 percent. The higher initial values for the smokers caused a decrease during duty in an atmosphere with high carbon monoxide concentration. At the same time, the lower initial values for the nonsmokers usually increased. Since the average carboxyhemoglobin saturation values did not exceed the toxic limit of 10 percent, it is not possible to conclude that poisoning may occur in the course of traffic regulation duties. It was not possible to relate any serious disease symptoms or health-harming consequences with the inhalation of carbon monoxide-containing air during the term of duty, as established by brief questioning of the test subjects. The fact, however, that 39 out of the 71 traffic police officers, i.e., more than one-half, experienced for a period of 1-2 hours such symptoms as headaches, nausea, and loss of appetite, should not be overlooked. (Authors' summary)

F-9019

Lehnert, G., K. H. Schaller, A. Kuehner, and D. Szadkowski
EFFECTS OF CIGARETTE SMOKING ON THE BLOOD LEAD LEVEL. Translated from German. Int. Archiv für Gewerbepathologie und Gewerbehygiene, Vol. 23, p. 358-363, 1967. 6 refs.

In the cigarette smoking investigations described, the smoke as well as the tobacco remains of eight of the most popular cigarette brands was analyzed with an atomic absorption spectrophotometric procedure for its lead concentration. An average of 0.8 micrograms of Pb was inhaled per cigarette, and of this amount some 0.3 micrograms was absorbed by the body. One hundred and sixteen subjects (71 smokers and 45 nonsmokers) were investigated under ecologically uniform conditions, but no statistically valid effects of cigarette smoking on the blood lead level could be determined. (Authors' summary)

F-9020

Jonderko, G., Zurkowski, A., and A. Wegiel
INVESTIGATION OF THE HEMATOPOIETIC SYSTEM IN ACUTE EXPERIMENTAL MANGANESE POISONING. [Untersuchungen des hämopoetischen Systems bei akuter experimenteller Manganvergiftung.] Translated from German. Int. Archiv für Gewerbepathologie und Gewerbehygiene. Vol. 21, p. 141-151, 1965. 21 refs.

Hematological investigations of the peripheral blood and the bone marrow were performed on rabbits with acute manganese chloride poisoning. The serum iron level was also determined. The results show that manganese chloride, when injected in toxic doses, exercises a manifold influence upon the blood formation system. During the early stage, as a result of a stimulation of the bone marrow, an increase in erythrocyte count and in the hemoglobin content occurred in the peripheral blood. At the same time an iron deficiency was noted in the body. The inhibition of hemopoiesis during the later stage of the toxic effect of manganese upon the blood forming system can be blamed upon the iron deficiency; an accumulation of this metal in the bone marrow is probably also involved. In particularly sensitive cases, there was both an inhibition of hemopoiesis and an anemia from the very beginning of the poisoning. (Authors' summary)

F-9021

Dervillée, P., G. Morichaud-Beauchant, M.-J. Charpentier, and Et. Dervillée
ON MANGANIC PNEUMONIA. [A propos de la pneumonie manganique.] Translated from French. Archives des Maladies Professionnelles, Vol. 27, p. 222-224, Jan.-Feb. 1966.

A review of two cases of acute manganic pneumonia is presented and the characteristics of the disease are briefly discussed. From the anatomopathological point of view, the observations which can be made are those of an ordinary pneumonia alveolitis (alveoli filled with a fibrinoleukocytic exudate). On the other hand, no conclusion can be drawn from quantitative analysis of manganese at the level of the pulmonary parenchyma: the same figures have been found in the lungs of miners who died from pneumonia and in those of subjects who died accidentally. The reality of manganic pneumonia rests on statistical studies made in many countries, which provide evidence of the abnormally high percentage of pulmonary illnesses in the various sectors of the manganese industry.

F-9253

Djordjevic, Sr. and M. Stankovic
AIR POLLUTION AND COMMUNAL SATURNISM IN MALO RUDARE VILLAGE. [Aerozagadenje i komunalni saturnizam u selu Malo Rudare.] Translated from Serbocroatian. Higijena (Belgrade), 12(1):35-44, 1960. 13 refs.

A study was conducted of the occurrence of respiratory and eye ailments among 107 inhabitants of the village of Malo Rudare in Yugoslavia. The village is located in close proximity to a lead and zinc foundry. Pharyngitis was the predominant illness, occurring in 86 percent of the study population. Percentage values are given for several other illnesses. Symptoms of chronic lead poisoning were found in the course of the study, which lead to an analysis of the lead content of the blood and urine of the subjects. Measurements were also made of lead in the air, soil, water, and food products of the region. Findings of an autopsy performed on a lamb indicated that lead might be producing a harmful effect upon grazing animals. On the basis of these studies it was concluded that the lead and zinc foundry was producing changes in the environment that were hazardous to the population.

F-9535

Teisinger, J.
RELATIONSHIP BETWEEN LEAD LEVEL IN BLOOD AND IN URINE IN PERSONS NOT EXPOSED TO LEAD. [Vztah mezi hladinou olova v krvi a v moci u lidi olovu neexponovanych.] Translated from Czech. Casopsis Lekaru Ceskych (Prague), 105(30):810-812, July 5, 1966. 5 refs.

Lead levels are tabulated for 789 urine and blood samples obtained from persons in 16 countries and major cities who had not been occupationally or otherwise exposed to lead. Lead levels in blood and urine ranged from 7-26 µg percent in blood and 22-46 µG/1 in urine. Analysis of the data showed that the lead concentration in the blood is directly proportional to that in urine. An increase in the blood level of 1 µg percent is accompanied by an increase in the urine level of 1.4 µg/1. A plot of lead concentration in the blood vs. that in the urine gives a straight line which intersects the urine concentration ordinate at a value of about 12 µg/1. Since this is impossible it appears that the correlation line must be curved in the lower concentration range. The proportionality between the lead concentration in the urine and in the blood is considered as indirect evidence that lead at normal blood levels is excreted by glomerular filtration only.

F-9605

Joetten, K. W.
THE USE OF ANIMAL EXPERIMENTS FOR THE DETECTION AND PREVENTION OF LUNG DAMAGE BY OCCUPATIONAL DUSTS. [Das Tierexperiment im Dienste der Aufklärung und Verhütung von Lungenschädigungen durch Gewerbestaub.] Translated from German. Archive für Hygiene und Bakteriologie, Vol. 131, p. 222-260, 1944. 39 refs.

Experiments were conducted in laboratory animals with damaged lungs from industrial dusts. The problem of etiology of pneumonia, interstitial changes at the lung, pneumoconiosis and, especially silicosis and silicotuberculosis as a consequence of inhaling various industrial dusts was investigated. It was concluded that different occupational dusts have entirely different actions on lungs. Above all, Silica dusts enhance tuberculosis of the lungs and produce silicosis or silicotuberculosis with or without the participation of tubercle bacilli. The extent of the lung damage is governed by the SiO_2 content of the dust. The action of SiO_2 is greatly modified by the admixture of other dusts (e.g. clay, Bolus alba, calcium, corundum, carborundum, etc.). Under certain circumstances these admixtures prevent silicosis. Dusts low in SiO_2 or containing none at all produce harmless dusts in lungs leading to uncomplicated pneumoconioses sensu Koelsch, recognizable by the formation of dust pockets in the lung tissues. Inhalation of manganese-containing dusts (Thomas slag, Siemens-Martin slag, MnO_2) produces pneumonia. Aluminum dust produced peculiar changes in the lungs, leading to the formation of connective tissue in the structure of the lung, i.e. "structure sclerosis". These pneumonia-like changes are favcred by certain factors which appear as a complex of factors. The complex plays a role in lung tuberculosis, together with social factors and the natural disposition of the patient. Sillimanite, dusted for more than 1-1/2 years, lead to lung changes which resembled lung cirrhosis. Symptoms are accelerated in the presence of a chronic infection.

F-9606

Heine, Wilhelm
OBSERVATIONS AND EXPERIMENTAL INVESTIGATION OF MANGANESE POISONINGS AND "MANGANESE PNEUMONIA". [Beobachtungen und experimentelle Untersuchungen über Manganvergiftungen und "Manganpneumonien".] Translated from German. Zeitschrift für Hygiene und Infektionskrankheiten, Vol. 125, 76p., 1944.

In the manganese milling plant of a large West German industrial plant, five cases of manganism occurred among a workforce of only 18 men during a period of approximately four years. This observation is significant because of the fact that, in this manganese milling plant, only ferromanganese, a metallic manganese, is ground. With regard to metallic manganese, the assumption to date had been that it cannot cause chronic manganese poisoning. It was established by animal experimentation that the degree of harmfulness of the various manganiferous substances bears no relation to the degree of oxidation of manganese, but rather that the toxicity of the manganiferous substances rises at a rate commensurate with the percentage increase of the manganese concentration. Chemical analysis showed that ferromanganese may be resorbed by any one of three methods of application. Consequently, the absorption of manganese is possible not only by inhalation, but also through the skin and by way of the gastro-intestinal tract. A temporary manganese deposit is possible in practically any organ. A permanent deposit of manganese was observed primarily in the bones. In a West German industrial plant which processes pure alloys for use in the production of high-grade steel, a considerable increase of cases of pneumonia among the workers was observed during several years. However, it was established on the basis of intensive studies that the increased incidence of pneumonia was not caused by specific substances, particularly by working with manganese, but these cases of pneumonia rather were results of other factors, such as dr[illegible]ughts, long-term unemployment, undernourishment, weather conditions, etc. Animal experiments established the fact that inhalation of ferromanganese dust, even if present at high concentrations, is not only unable to produce pneumonia, but also is not a potential [illegible] in creating "increased susceptibility" to infection.

F-9610

Poraznik, I. and I. Pajed
EFFECTS OF AIR POLLUTION ON KROMPACHY CHILDREN. [Vyhodnotenie vplyvu ovzdusia v oblasti Krompach na cerveny krvny obraz u vybraneho suboru skolskych deti.] Translated from Slovak. Ceskoslovenska Hygiena, 11(9):526-530, 1966. 8 refs.

The erythrocyte counts of children living in an environment polluted with arsenic from a metallurgical works were compared with counts from a group of children living in an unpolluted area. There were forty-three children in the study group and forty in the control group. A reduction was found in the erythocyte count of children from the polluted area at the 5 percent level of significance. No significant differences were found in the hemoglobin and hematocrit values.

F-9727

Rasche, B. and W. T. Ulmer
CELLULAR RETENTION AND CELLULAR TRANSPORT OF INHALED DUST PARTICLES IN ALVEOLAR MACROPHAGES. [Die zelluläre Retention und der zelluläre Transport inhalierter Staubpartikel in Alveolarmakrophagen.]

Translated from German. Med. Thorac. (Basel), 24(4): 227-236, 1967. 19 refs.

The alveoli are constantly traversed by free mononuclear cells, the macrophages, which may be significantly increased in number as a result of the inhalation of various irritants, including dust. After repeated inhalation of ultramarine blue paint dust particles (1-2 μ), guinea pigs and higher phagocyte indices than after a single inhalation. Phagocytized paint particles were also carried from the lungs to peritoneal organs in response to prior intraperitoneal irritation. As a result, fewer macrophages remained available to purify the lungs.

F-9958

Strandberg, Lars
CHANGES IN THE NO_2-ABSORBTION OF THE RESPIRATORY TRACT WHEN EXPOSING RABBITS TO NO_2 TOGETHER WITH CARBON PARTICLES. [Förändrad NO_2-absorbtion i luftvägarna hos kanin vid samtidig koldammtillförsel.] Translated from Swedish. Nord. Hyg. Tidskr. (Copenhagen), 48(1):8-12, 1967. 10 refs.

Groups of rabbits were exposed to NO_2 (15-65 ppm). One group was exposed to NO_2 without particles, another group to NO_2 plus carbon particles (most particles over 0.25 μ). The third group was also exposed to NO_2 plus carbon particles (most less than 0.25 μ). Gas absorption was then studied using a method previously described. Rabbits exposed to NO_2 and carbon particles absorbed more NO_2 in the upper respiratory tract than the NO_2-exposure group. Differences in the absorption pattern and the respiratory pattern when comparing the two carbon particle groups could also be observed. The changed NO_2 absorption pattern in the presence of carbon particles may be the result of synergistic actions. (Author's summary, modified)

F-10152

Wasserman, M. and Georgeta Mihail
SIGNIFICANT INDICATORS FOR THE EARLY DETECTION OF MANGANISM IN MINERS WORKING IN MANGANESE MINES. [Indicateur significatifs pour le depistage precoce du manganisme chez les mineurs des mines de manganese.] Translated from French. Acta Med. Legalis Socialis (Liege), Vol. 17, p. 61-89, July-Sept. 1964. 59 refs.

The pathology of workers engaged in the handling of manganese is characterized by three nosological entities: manganic pneumonia, chronic manganese intoxication and manganoconiosis. In the present state-of-the-art of ore extraction, the use of pneumatic drilling leads to a considerable increase in the amount of dust present in the air of working areas, concentrations that are not influenced by the natural infiltration of water into the ore deposits. The consequence of this fact in the mines investigated here as well as in mines of other countries has been an increased risk of intoxication. Two medical surveys were carried out, the survey of 1949-50 and of 1957-58. These surveys showed that manganese mines represent the principal source of chronic manganese intoxication. The medical survey of 1949-50 revealed the existence of two categories of neurological disorders. In the survey of 1957-58, the existence of three categories of clinical disorders were revealed. These disorders are all discussed in great detail as are laboratory examinations and results.

F-10202

Picko, V.
POLLUTION OF THE ATMOSPHERE AND ITS REFLECTION IN THE BLOOD COUNT OF CHILDREN. [Znecisteni ovzdusi a jeho odraz na krevnim obraze deti.] Translated from Czech. Cesk. Hyg., 7(7):422-429, 1962. 12 refs.

The influence of living in an atmosphere polluted in varying degrees was investigated in children by determining the blood picture and some of its indicators (erythrocyte count, color index, hematocrit value, and volume of erythrocyte). Application of the analysis of variations showed that significant differences do exist, and that these differences correspond to the observed degree of air pollution. In addition it was shown that the organism defends itself by a certain reaction against the influence of the polluted environment, attempting in this way to offset its effects. At the same time it was proved that the groups of children investigated differed essentially from each other, so that it is evident that the results found are not accidental differences in the same basic group. (Author's summary)

F-10203

Balazova, G., L. Balazovjechova, and V. Kirilcukova
DEPTH ANALYSIS OF THE HEALTH OF CHILDREN LIVING IN THE VICINITY OF ALUMINUM WORKS. [Hlbkovy rozbor zdravotneho stavu deti v sidliskach z okolia zavodu na vyrobu hlinika.] Translated from Slovak. Cesk. Hyg., 5(10):573-579, 1960. 20 refs.

Children living in a village in the vicinity of an aluminum plant and in a control village were examined for hemoglobin percentage, erythrocyte and leucocyte counts, differentiation of the blood count, amount of fluorides eliminated in urine, and general state of health. In the case of the children of the affected village, radiographs were also taken of the bones, and the children's teeth were examined. In the affected village the average percentage of hemoglobin was 62.8 percent in the 6-8-year-old group and 69.5 percent in the 9-11-year-old group as compared to 70.9 percent and 72.2 percent, respectively, in the control village. The average erythrocyte count in children of the affected village was 3,958,000 in the 6-8-year-old group and 4,208,000 in the 9-11-year-old group as compared to 3,741,000 and 3,783,000 respectively in the control village. No substantial differences were found in the values of segmented and unsegmented neutrophiles, eosinophiles, basophiles, and the lymphocyte and monocyte counts between children of the affected village and the control village. The average level of fluorides eliminated in urine was 0.91 mg/l in children of the affected village as compared to 0.48 mg/l in those of the control village. Evaluation of subjective complaints and objective symptoms shows no perceptible differences between children of the affected village and those of the control village. Radiographs of bones for children of the affected village showed no changes which could be suggestive of pathological and significant fluorosis. The teeth of the children from the affected village also showed no traces of fluorosis. (Authors' summary)

F-10356

Rosmanith, Jindrich, Karel Bubik, and Ladislav Namestek
THE DEGREE OF CARBONIZATION AS A CAUSE FOR THE DIFFERENT BIOLOGICAL AGGRESSIVITY OF COAL DUST. [Stupen prouhelneni jako pricina ruzne biologicke agresivity prachu z cerneho uhli.] Translated from Czech. Pracovni Lekar. (Prague), 16(3): 117-120, 1964.

The incidence of pneumoconiosis of miners in 20 Czechoslovak coal mines was studied by X-ray tests and correlated with the carbon content (geological age) of the coal. A very good correlation was found which indicates that the hazard of a coal mine increases with the carbon content. It is highest for anthracite and lowest for bituminous coal. These results agree with those from studies in Great Britain. The effects of exposure time and dust particle size were taken into consideration and are discussed.

F-10413

Wachsmuth, W. and H. J. Viereck
THE ETIOLOGY OF BRONCHIAL CARCINOMA. EVALUATION OF 1000 ORIGINAL CASES. [Beitrag zur Ätiologie des Bronchialkarzinoms. Auswertung von 1000 eigenen Fällen.] Translated from German. Deut. Med. Wochenschr. (Stuttgart), 89(13:606-611, March 27, 1964. 20 refs.

A questionnaire designed to shed light on environmental factors of possible etiological significance was distributed to 1000 lung cancer patients (mostly males) or their families. Males were more frequently affected than females (940:60). Of the respondents, 91.4 percent were smokers. The greatest incidence of lung cancer was found among hotel and restaurant (and tavern) employees, traffic and transportation workers, and metal industry workers. A statistically significant low incidence of lung cancer (less than one case per 1000 workers employed in the area surveyed) was noted in occupational areas of agriculture, forestry, textiles, and health sciences. A tabulation of patients according to size of locality (including the cities of Würzburg, Schweinfurt, and Aschaffenburg) is interpreted as showing a greater incidence of lung cancer in urban areas, due to air pollution caused by traffic concentration and the presence of industry. Exhaust gases, tars and chemicals are among the pollutants implicated. The role of tobacco is discussed.

F-10783

Candura, F., A. Craveri, and F. Brasca
FIBRINOLYSIS IN ACUTE CO POISONING: EXPERIMENTAL RESEARCH. [La fibrinolisi nell'ossicarbonismo acuto: Ricerche sperimentali.] Translated from Italian. Folio Med. (Naples), 44(5):400-408, May 1961. 44 refs.

Fibrinolysis and COHb levels were observed in 21 rabbits before and after exposure to 5 to 8 percent CO. The technique for determination of fibrinolysis is described. Fatal intoxication with CO causes a significant rise in fibrinolytic activity, and specifically a marked rise in plasmin level. Observation of plasminogen behavior in vitro, before and after plasminogen triggering, showed a clear drop in 12 cases. Thus, in the other 9 rabbits, plasminog[illegible] triggering which occurred after intoxication and caused the increase in free plasmin was counteracted by the appearance of an excess of new plasminogen. The increase in fibrinolysis rate could not be correlated with COHb level. In conclusion, the fluid blood noted post-mortem in cases of CO poisoning is probably due to the increased fibrinolysis rate, but the lack of correlation between the increase in fibrinolysis rate and the COHb level suggests that blood fluidity is caused by nonspecific stress-triggered mechanisms.

F-10784

Almgren, Sigyn
TWELVE YEARS OF EXPERIENCE IN THE FIELD OF CHRONIC CARBON MONOXIDE POISONING IN SWEDEN. [12 Jahre Erfahrungen auf dem Gebiete der chronischen Kohlenoxydvergiftung in Schweden.] Translated from German. Arch. Gewerbepathol. Gewerbehyg. (Heidelberg). Vol. 13, p. 97-131, 1954. 80 refs.

The incidence of CO poisoning has risen since the appearance of generator gas from automotive exhausts in Sweden in about 1939. In December 1940, the Fuel Commission issued directions for the manufacture and use of generator gas motors, followed by further efforts to alert the public to the danger of CO poisoning from the use of generator gas motors. The exhaust of a generator gas motor contains a greater quantity of CO (5 to 8 percent) than does that of a gasoline motor and during starting and after stopping, up to 30 percent CO can be emitted. Thus, during 1939-1944, 41 fatal cases of accidental generator gas poisoning were registered. At this time, chronic generator gas poisoning quickly became the most common occupational disease in Sweden, but declined after the war when the use of generator gas declined. Then, the danger of CO poisoning from faulty chimneys and the burning of inferior fuels became of widespread interest. Experience with patients at the Generator Gas Clinic in the Sabbatsberg Hospital during 1941-1945 is discussed. Symptoms of 1883 patients are described. Fatigue, disorientation, absent-mindedness, and disruption of powers of concentration were noted, as were headaches, dizziness, insomnia, and apathy. These disruptions of perception ofte[illegible]l to traffic accidents; such cases with chauffers and [illegible] drivers are noted. Clinical and otoneurological findings upon examination are noted. Some patients became more sensitive to alcohol. Occupational and medical insurance aspects of CO poisoning, especially occupational poisoning, are discussed. Five cases are described in detail.

F-10778

Truche, M. R.
THE TOXICITY OF OZONE. [La toxicite de l'ozone.] Translated from French. Arch. Maladies Profess. Med. Travail Securite Social (Paris), 12(1):55-58, Jan.-Feb. 1951.

The characteristic odor of ozone is noticeable about 1 ppm below 4 ppm, ozone induces non-symptomatic effects, such as a 10 to 20 percent drop in basal metabolism, reduced pulse rate and marked drop in arterial blood pressure in hypertensives (not in young persons or in hypotensives). At higher, symptomatic levels, the characteristic symptoms appear: substernal pressure, or a feeling of oppression, but no irritation of the mucous membranes. The oppressive feeling disappears as soon as the ozone level drops below 4 ppm. Symptoms of the higher irritant, but nontoxic levels are: cough, itching of the nose and throat, aggravation of symptoms by tobacco smoke, and general mucosal irritation. This irritation and sore throat may persist for several days. One source believes that ozone is nontoxic to man in levels up to 1000 ppm for a short period, or 20 ppm for long periods of exposure. Occupational examples of irritation by ozone are mentioned, specifically in a test laboratory of a factory for electronic insulators.

F-10779

Henschler, D. and W. Laux
ON THE SPECIFICITY OF THE TOLERANCE INCREASE UPON REPEATED INHALATION OF GASES THAT PRODUCE PULMONARY EDEMA. [Zur Spezifizität einer Toleranzsteigerung bei wiederholter Einatmung von Lungenödem erzeugenden Gasen.] Translated from German. Arch. Exp. Pathol. Pharmakol. (Berlin), 239(5):433-441, 1960. 16 refs.

Sub-lethal doses of irritant gases will protect against the formation of lethal pulmonary edema upon subsequent inhalation of highly toxic levels. Groups of 20 Wistar rats each were pretreated for 6 hr with low levels of phosgene (1 ppm), NO_2 (20 to 40 ppm), or ozone (1.6 to 20 ppm) and four days later were exposed for a half-hour to lethal levels of one of the three gases. Survival rate, survival time, and relative lung weights are used as criteria of protective effects for the pre-treated animals and for the controls. Ozone protects against subsequent ozone exposure, and also slightly against subsequent NO_2 or phosgene exposure. NO_2 protects against itself and ozone; pretreatment with Phosgene produces the most powerful tolerance increases, specifically, and in ascending order, to phosgene, ozone, and NO_2. Pretreatment with NO_2 is without any definite effect on phosgene poisoning. Since the protective effects are thus not specific for one kind of gas, an antigen-antibody reaction is ruled out. The large variations in degree and duration of the protective give rise to the belief that several unknown processes are involved.

F-10780

Schulz, Hugo
CHRONIC OZONE POISONING. [Ueber chronische Ozonvergiftung.] Translated from German. Arch. Exp. Pathol. Pharmakol. (Berlin), 29(5-6):364-385, 1892. 6 refs.

Either separately or in pairs, a total of 3 rabbits, 5 cats, and 6 dogs were exposed repeatedly to ozone for 1 to 2 hours at a time. The bell-jar apparatus used for exposure is described. Ozone concentrations were not determined, but some of the rubber hosing was repeatedly eaten away. The animals died after totals of 2-62 hr exposure over periods of several days. Autopsy details are given. Descriptive details are also given of behavior and symptoms observed while exposed to the ozone.

F-10781

Bringmann, G.
ATTEMPTS AT THE QUANTITATIVE DETERMINATION OF THE LETHAL EFFECTS OF CHLORINE AND OZONE ON ESCHERICHIA COLI. [Versuche zur quantitativen Bestimmung der letalen Wirksamkeit von Chlor und Ozon auf e. coli.] Translated from German. Z. Hyg. Infektionskrankh. (Berlin), 139(2):130-139, 1954. 4 refs.

Using suitably buffered media so that the number of living Escherichia coli would otherwise remain constant, the effects of 0.06 to 0.40 mg/l chloride and of 0.11 to 0.33 mg/l ozone upon the survival of the bacteria were observed. The apparatus is described for the administration of ozone to one-liter suspensions of the bacteria for 5 to 15 sec. The number of surviving bacteria in a certain number of hours after exposure to chlorine is graphed. Because of the variable decrease in chlorine content as a result of varying initial bacterial counts, the time curve for lethality is steeper for a small number of cells in the initial suspension than for larger numbers. The lethal effect is accelerated by higher temperatures; the same result is achieved at 37° C in about half the time required at 22° C. The extraordinarily quick action of ozone, 600 times that of chlorine, may reflect a different mechanism of action. Since the time for total killing of a bacterial suspension is so brief, the situation cannot be the result of a microphysical impact effect. It is possible that ozone can induce a general effect, rather than some selective effect to the vital centers.

F-10790

Bassleer, R.
CONTRIBUTION TO THE STUDY OF INTOXICATION BY OZONE. [Contribution a l'etude de l'intoxication par l'ozone.] Translated from French. Acta. Belg. Arte Med. Pharm. Mil., 4(2):253-269, June 1958.

Experiments where white rats (300 gm) were exposed to the acutely toxic levels of 60 ppm indicate that ozone produces major changes in the alveoli. Effects of cardiac and respiratory rhythms and on hemoglobin saturation are graphed. Survival time was about 5 hr. The effects of nembutol, morphine, largactil, lobeline, adrenaline, and digitalis are also noted. The many characteristics common to poisoning with ozone and with oxygen lead to the conclusion that an identical mechanism is involved in both cases.

F-10791

Henschler, D., A. Stier, H. Beck, and W. Neumann
OLFACTORY THRESHOLD OF SOME IMPORTANT IRRITANT GASES (SULFUR DIOXIDE, OZONE, NITROGEN DIOXIDE) AND MANIFESTATION IN MAN BY LOW CONCENTRATIONS. [Geruchsschwellen einiger wichtiger Reizgase (Schwefeldioxyd, Ozon, Stickstoffdioxyd) und Erscheinungen bei der Einwirkung geringer Konzentrationen auf den Menschen.] Translated from German. Arch. Gewerbepathol. Gewerbehyg. (Heidelberg), 17(6): 547-570, March 1960. 46 refs.

An 8 m^3 exposure chamber and auxiliary equipment are described for use in exposure esperiments. After a review of the effects of low levels of SO_2, nitrogen oxides, and O_3 on human beings, work is described using groups of 10 to 14 male volunteers. SO_2 was smelled and/or tasted by subjects at 0.5 ppm, by 75 percent at 1.0 ppm, and by all at 2.5 ppm; 5 ppm reproduced cough and irritation. The initial odor slowly changes into a sensation of flavor. Increased humidity has no effect on the sensations. The olfactory threshold lies below the lowest tested concentration of 0.02 ppm. Odor perception diminished rapidly and 0.5-12.0 min. exposure to O_3 no longer led to an olfactory perception. Increased humidity also has no effect on perception. NO_2 is smelled by some at 0.1 ppm, and by all of 0.4 ppm. The olfactory sensation disappears upon continued inhalation of higher levels (up to 20 ppm) for several minutes. Local irritations appeared during initial exposure to NO_2, but subsequent exposures led to rapid adjustment. Increased humidity with 1 ppm NO_2 increases the number of irritant symptoms. A rapid increase in the threshold of perception to relatively strong NO_2 levels is observed. Results, including subjective effects, are tabulated.

F-10792

Flury, Ferdinand and Frans Zernik
NOXIOUS GASES, FUMES, VAPORS, FOG, AND VARIETIES OF SMOKE AND DUST: OZONE. [Schaedliche Gase, Daempfe, Nebel, Rauch- und Staubarten: Ozone.] Translated from German. Berlin, Julius Springer, 1931, p. 115-116. 14 refs.

The chemical properties of O_3 are described. Based on the literature, the symptoms of acute and chronic poisoning are summarized for animals and man. Death usually occurs from pulmonary edema, usually with convulsions. In man, brief inhalation of 5-10 ppm leads to accelerated pulse, sleepiness, and lasting headaches.

F-10793

Castellino, N. and V. Perla
CARBON MONOXIDE CONCENTRATION IN THE BLOOD. (Contributo allo studio della carbossiemia.) Translated from Italian. Folia Med. (Naples), 42(3):209-222, March 1959. 20 refs.

COHb levels were measured in 302 patients: 46 with diabetes, 66 with gastrointestinal and hepatic disorders, 38 with anemia, 30 with cardiac conditions, 74 with respiratory ailments, and several with occupational diseases (24 with caisson disease and 14 with lead poisoning). Readings were compared with those from 100 normal subjects, with breakdown by smoking habit. In only a very few patients with uncompensated cardio-circulatory disturbances or respiratory diseases was any increase in COHb level noted. The high levels in these particular morbid conditions are attributed to incomplete CO elimination through the lungs, with a consequent build-up in the blood, rather than, as others have proposed, to oxygen insufficiency, with consequent failure to oxidize carbon to carbohydrate. Thus, the presence of CO in the human bloodstream is considered to be of foreign origin, not endogenous. The wide variations observed simply reflect heavier absorption or lowered elimination as a result of individual or environmental differences.

F-10794

Desoille, H., L. Truffert, J. Lebbe, R. Boncour, and C. Girard-Wallon
EXPERIMENTAL CHRONIC CARBON MONOXIDE POISONING. (PRELIMINARY NOTE). [L'intoxication experimentale prolongee par l'oxyde de carbone. (Note preliminaire).] Translated from French. Arch. Maladies Profess. Med. Travail Securite Sociale (Paris), 25(7-8):389-394, July-Aug. 1964. 3 refs.

In order to explore the effects of chronic CO poisoning, rats, guinea pigs, and rabbits were exposed in an airtight, 2 m^3 cage. Exposures lasted 6 hours, and were repeated daily, five times a week. Resultant effects on COHb levels and on electroencephalograms are noted. The exposure system used is flow-charted. Exposure to 250-450 ppm CO led to a slight rise in COHb levels (up to 4 percent), which fell 12 hours later. Blood cells were normal; slight disturbances in serum protein levels were found. Slight disturbances in electroencephalograms are noted.

F-10800

Chalupa, B.
MEMORY DEFICIENCIES AFTER ACUTE CARBON MONOXIDE POISONINGS. [Pametni nedostatky po akutnich otravach kyslicnikem uhelnatym.] Translated from Czech. Pracovni Lekar (Prague), 12(7):331-336, 1960. 21 refs.

The results of experimental examination of memory are reported for a group of 44 patients recently recovered from acute and subacute poisoning. Average age of the patients was 35.6 yr. The following methods were used: repeating 20 separate words, identification of the same material from a group of 10 expressions, and repetition of 30 verbal pairs having related meanings. Disturbance of logical memory and difficulty in differentiating were found; mechanical memory was relatively intact. When evaluating the result, pathological changes of the memory structure were found in 26 patients (59.9 percent). These findings were most frequent in the group of industrially exposed patients, although loss of consciousness was noted in only 21.6 percent. About half of the suicidal patients (54.5 percent), who had all lost consciousness, exhibited pathological deviations, as did most persons (47.7 percent) who had suffered from acute, accidental poisoning (loss of consciousness in 36.8 percent). When CoHb levels upon admission were compared with the degree of decreased logical memory in 22 patients, a positive correlation was found. At CoHb levels up to 29.9 percent, disorders of memory were found in 33.3 percent; at levels of 30-78.3 percent CoHb, disorders of memory were found in 61.5 percent. Repeated examinations indicate that, with time, logical memory and recognition returned to normal and that mechanical memory remained the same (virtually normal).

F-10805

Ricci, C., F. Capellaro and P. C. Gaido
ELECTROPHORETIC AND IMMUNO-ELECTROPHORETIC EXAMINATIONS IN WORKERS EXPOSED TO CHRONIC CO INTOXICATION. [Indagini elettroforetiche

ed immunoelettroforetiche sul siero di individui esposti a rischio protratto da CO.] Translated from Italian. Rass. Med. Ind. (Rome), 33(3-4):414-416, May-Aug. 1964.

Persons exposed to CO for more than 3 months exhibit a sharp increase in the transferrin fraction of their serum. The sera of 19 persons working near coke distillation ovens, and thus exposed to CO occupationally for at least 3 months, were examined. CO levels averaged 500 ppm., but rose as high as 3000 ppm. An increase in B-globulin was found in 40 percent, with values as high as 20.3. Persons with the highest B-globulin levels were persons with the longest CO exposures. When sera were tested electrophoretically for concentration of B_1-globulin (or transferrin): transferrin levels exceeded 300 mg/100 cc serum.

F-10806

Trompeo, G., P. C. Gaido, and F. Capellaro
CARBON MONOXIDE CONCENTRATION IN THE AIR AND CARBON MONOXIDE POISONING. [Concentrazioni ambientali di ossido di carbonio e carbossiemoglobinemia. Studio sui meccanici di autorimesse.] Translated from Italian. Rass. Med. Ind. (Rome), 33(3-4):440-442, May-Aug. 1964. 8 refs.

In 12 underground garages, the average CO level at working areas was 98 ppm (range, 10-300 ppm), of which 31.8 percent of the readings were above 100 ppm (the American MAC). In a group of 26 workers, COHb levels ranged from traces to 18.7 percent; five subjects had COHb levels over 10 percent. The average COHb levels for workers in areas having 100 ppm or more CO was about 6 percent. Workers in areas with less than 100 ppm averaged about 4 percent. Thus, the workers appeared to average 5 percent COHb, which level is higher than that found in smokers not exposed to other sources of CO. A close correlation was found between high CO levels in the surrounding air.

F-10807

Paris, Jean
EVALUATION OF "EXCITATION-DURATION" CURVES AFTER ACUTE OCCUPATIONAL INTOXICATION BY CARBON MONOXIDE. [Etude des courbes "excitation-Duree" apres intoxication aigue professionnelle par l'oxyde de carbone.] Translated from French. Rass. Med. Ind. (Rome), 33(3-4):275-291, May-Aug. 1964. 2 refs.

The modifications of excitability-duration curves after acute occupational CO intoxication in seven persons are characterized by pronounced hypoexcitability of the nerve and consequent inversion of the nerve-muscle excitability ratios. Such modifications have already been observed by many authors in states of fatigue, in reduced resistance after surgery, and in chronic alcoholism. The inversion in this excitability ratio appears to indicate that the subjective clinical syndrom of muscular asthenia with weakness in the lower legs, customarily observed after acute intoxication by CO can be considered as an objective clinical symptom.

F-10808

Marchiaro, G., E. Margaria, P. C. Gaido, and G. Aquaro
ACID-BASE EQUILIBRIUM IN EXPERIMENTAL ACUTE INTOXICATION FROM CARBON MONOXIDE. [Equilibrio acido base nell'intossicazione acuta sperimentale da ossido di carbonio.] Translated from Italian. Rass. Med. Ind. (Rome), 33(3-4): 452-453, May-Aug. 1964.

In one of the tired dogs experimentally poisoned with CO, a progressive decrease in blood pH values is found, (from 7.38 to 7.26) accompanied by an increase in pCO_2, (from 43 to 56 mm Hg). This acidosis tends to correct partially during the successive stages of treatment.

F-10810

Candura, Francesco and Angelo Craveri
AMOUNT AND SIGNIFICANCE OF FIBRINOLYSIS IN EXPERIMENTAL CARBON MONOXIDE INTOXICATION. [Valore e significato della fibrinolisi nell' ossicarbonismo sperimentale.] Translated from Italian. Rass. Med. Ind. (Rome), 33(3-4):404-406, May-Aug. 1964. 4 refs.

A study was made of fibrinolysis in animals acutely intoxicated with CO. The increase in fibrinolysis is found only in vivo, and is found even in animals whose suprarenal glands have been removed. The removal of the spleen, however, prevents the occurrence of this phenomenon. Two hypotheses are advanced: release of "hypoxylienin" can lead to hypocoagulability, or immission into the circulation of splenin B, a principle with profibrinolytic activity, can lead to fibrinolysis.

F-10811

Zorn, Hans
THE DIAGNOSIS OF CHRONIC CARBON MONOXIDE POISONING. [Zur Diagnostik der chronischen Kohlenoxydvergiftung.] Translated from German. Rass. Med. Ind. (Rome), 33(3-4):325-329, May-Aug. 1964.

Tests which should be employed to judge the relationship between subtoxic occupational CO levels and illnesses of the workers are listed. Workers in a blast furnace workshop were observed for two years. They showed no unusual irritability due to the monotonous noise (90 phon.) in the shop until a defective machine released small amounts of CO. Increased sensitivity to noise was then found, as well as increased psychic irritability. Inquiry at home showed that the workers showed increased sensitivity to noise accompanied by insomnia. CO tests yielded 10-20 percent COHb at the end of a shift. Audiogram of an older worker showed a clear loss in the higher tones, and others had lost 1500 Hz with a small proportion of the loss in the higher tones. Electroencephalograms exhibited variations, even in the younger workers. Six weeks after the equipment was repaired, tests on the younger workers were normal. Recovery in the older workers was not complete, even after 16 weeks.

F-10342

Grieser, N.
FLUORINE INTAKE INCREASED IN MAN BY FOOD PRODUCTS OF ANIMAL ORIGIN. Translated from German. Med. Ernaehr. (Munich), 6(2):30-35, 1965. 29 refs.

Because the practice of feeding farm animals mineral phosphates is spreading, it is important to find out whether long-range administration of large amounts of fluorine, contained in the mineral phosphates, can increase fluorine levels of foods such as meat, milk and eggs. Resorption, accumulation, elimination, and equilibrium states for small amounts of fluorine are discussed, as are fluorine contents of food products of animal origin. No reference is made to air pollution.

F-10846

Navratil, M.
VENTILATION AND DISTRIBUTION OF AIR IN THE LUNGS IN CHRONIC ASTHMOID BRONCHITIS. [Pomery ventilace a distribuce vzduchu v plicich u chronicke astmoidni bronchitidy.] Translated from Czech. Casopis Lekaru Ceskych (Prague), 101(45):1353-1357, Nov. 1962. 21 refs.

Data on ventilation, residual volume, and distribution of air in the lungs are assessed as a group of patients with chronic bronchitis with emphysema. The criterion for classification into the two groups was the result of the pneumotachogram or the epinephrine test. Ventilation and distribution deteriorated considerably in the patients, compared with controls, and provided evidence that emphysema in these pathological conditions is the main pathogenetic factor of dyspnea. The asthmoid component reduced the respiratory function even more markedly, but this deterioration was not sufficient to manifest itself significantly when evaluated statistically.

F-10849

Troquet, J. and D. Colinet-Lagneaux
SHALLOW RESPIRATION AND PULMONARY EDEMA INDUCED IN THE RABBIT BY OZONE INHALATION. [Respiration superficielle et oedeme pulmonaire provoques, chez le lapin, par l'inhalation d'ozone.] Translated from French. Arch. Intern. Pharmacodyn., 157(1):228-230, Sept. 1965. 4 refs.

In experiments on five anaesthesized rabbits, vagotomy was found to aggravate ozone-induced edema. It is pointed out that ozone intoxication is not the only phenomenon which can produce tachypnea with reduced volume, associated with alveolar edema. Embolism of the pulmonary artery by small particles is one example. Superficial respiration can also occur in the absence of edematous infiltration of the lung, as in the case of anaphylactic shock in the rabbit. However, polypnea in the rabbit induced by ozone is intense and stable as long as the vagal nerve remains intact.

F-10851

Watanabe, Hiromu, Fusa Kaneko, Hisako Murayama, Shigeo Yamaoka and Toshio Kawaraya
EFFECTS OF AIR POLLUTION ON HEALTH. REPORT NO. 1: ON PEAK FLOW RATE AND VITAL CAPACITY OF PRIMARY SCHOOL CHILDREN. Translated from Japanese. Report of the Osaka City Institute of Hygiene (Osaka), Vol. 26, p. 32-37, 1964. 18 refs.

The effect of SO_2 and dust pollution in an industrial area of Osaka, Japan, on the pulmonary function of school children was investigated. Peak flow rate and vital capacity measurements of 275 children from two schools in the city were compared with those of 150 children of a rural area. At the same time a questionnaire survey elicited data on the childrens' respiratory health, and the school health records were used for height and weight measurements. Dust count and SO_2 concentration data were obtained concomitantly. Children from one of the city schools, in the most polluted area, showed a tendency toward delay in the peak flow rate increase due to growth, in parallel with a high dust count and SO_2 concentration in their area; a remarkably high percentage of these students showed a peak flow rate of less than 250 liters/min with a vital capacity ratio of more than 80 percent, differing significantly from the other two schools.

F-10852

Toyama, Toshio, Fujishige Nakamoto, Haruo Kondo, and Yoshiro Tomono
CIGARETTE SMOKING AND PULMONARY VENTILATORY CAPACITY: AN EVALUATION OF WRIGHT'S PEAK FLOW RATE IN INDUSTRIAL WORKERS. Translated from Japanese. Nippon Koeishi (Japan Public Health) (Tokyo), 7(12):1-14, Dec. 15, 1960.

In a study of 1010 healthy outdoor electricity supply company workers, the relationships between peak flow rate, number of cigarettes smoked per day, and years spent in smoking were investigated statistically with age and height taken into account. The peak flow rate of the habitual smoker was lower than that of the nonsmoker. The peak flow rate of heavy smokers with a smoking habit of 10 years or longer duration was significantly lower than the peak flow rate of those who had smoked 5 years or less; this difference was not true of light smokers (10 cigarettes or less per day).

F-10853

Toyama, Toshio and Yoshiro Tomono
PULMONARY VENTILATORY CAPACITY OF SCHOOL CHILDREN IN A HEAVILY AIR-POLLUTED AREA. Translated from Japanese. Nippon Koeishi (Japanese Journal of Public Health), (Tokyo?), 8(9): 659-666, 1961. 33 refs.

A controlled study of the effects of air pollution on the pulmonary ventilatory capacity of school children in Japan is reported. Measurements of pollution and vital capacity, the 0.5 second expiratory capacity, Wright's peak flow rate, and the questionnaire results from two areas are compared. There was a close relationship between air pollution and the children's ventilatory capacity. Two areas were studied; one relatively contaminated with pollutants, the other relatively clean.

F-10854

Stöfen, D.
LEADED GASOLINE AND ITS EFFECT ON HEALTH. [Die Benzinverbleiung und ihre gesundheitlichen Folgen.] Translated from German. Zentr. Arbeitsmed. Arbeitsschutz (Darmstadt), 16(1):n.p., Jan. 1966. 6 refs.

The toxic hazards of tetraethyl lead are discussed, with emphasis upon Soviet work which was not mentioned in another article on this subject. The low tolerance level permitted in the Soviet Union indicated a certain amount of work on the problem has been performed there. Theoretical tolerance figures have recently been confirmed by Soviet researchers who report eight times as many gastrointestinal and nervous system disorders and twice as many cardiovascular diseases in people who lived near a tin smelter. The urinary lead levels were slightly above physiological limit, a level which corresponds to values observed in large Swiss and American cities.

F-10855

Fatzer, R.
SYMPTOMS OF SUBLIMINAL LEAD AND LEADED-GASOLINE POISONING. [Symptome der unterschwelligen Blei- bzw. Bleibenzinvergiftung.] Translated from German. Schweiz. Med. Wochschr. (Basel), 83(27): 631, 1953.

The symptoms include rheumatic complaints, back pains, headaches, nasal dermal abcesses, inflammation of the kidneys and bladder, dizziness, trembling, gum bleeding, and hesitation in answering questions.

F-10856

Stöfen, D.
EFFECT OF LEADED GASOLINE ON HEALTH. [Gesundheitliche Folgen der Benzinverbleiung.] Translated from German. Preprint, 6p., [1965?] 17 refs.

Work dealing with the dangers of leaded gasoline are reviewed. Much of the research, conducted by Kettering Laboratories, points out that the lead level in the blood of the average American is not essentially increased by the use of leaded gasoline. Swiss workers report that blood levels are deceptive and unreliable. Furthermore, tetraethyl lead can be directly inhaled by passengers in an air-conditioned car if the engine and carburetor are not correctly adjusted. Genetic effects of lead on the fetus have been noted. Effects of lead poisoning on human beings, especially upon intelligence, are reviewed, and precautions are listed.

F-10857

Morando, A. E. and B. Oppezzi
TREND OF MORTALITY FROM MALIGNANT TUMORS IN GENOA FROM 1951 TO 1963. [Sull'andamento della mortalita per tumori maligni in Genova, dal 1951 al 1963.] Translated from Italian. G. Ig. Med. Prev. (Genoa), 6(4):401-408, Oct.-Dec. 1965. 4 refs.

Standardized mortality ratios according to age are derived for malignant tumors of the lungs and other parts of the body, using death certificates from 1951 to 1963 in Genoa. While mortality from malignant tumors of the lungs doubled during this period, mortality from other malignant tumors remained practically constant. The data are graphed.

F-10859

Fridlyand, I. G.
CARBON MONOXIDE POISONING DURING THE SIEGE OF LENINGRAD (1941-1943). [Otravleniya okis'yu ugleroda v osazhdennom Leningrade.] Translated from Russian. Leningrad, 1947, 118p. 74 refs.

CO poisoning due primarily to the widespread use of temporary primitive stoves for heating apartments and offices during the 1941-1943 siege of Leningrad, is reviewed. The studies are based on 1020 cases of which 256 were hospitalized. The majority of cases were severe and mortality was relatively high. The discussion, supported by tables, covers clinical symptoms observed, including an incidence of concomitant pneumonia in 34 percent of the hospitalized patients, blood examination for carboxyhemoglobin, severity of poisoning, and course of the intoxication, illustrated by specific cases. The pathogenesis of the CO poisoning during these war years viewed as different with respect to factors such as alimentary dystrophy, psychic and neurological conditions. A synergistic action of the toxic gas and the unfavorable course of the CO poisoning in many of the patients. Problems of therapy, including blood transfusions, are illustrated by sample cases. Group poisoning episodes indicated that various persons exposed to similar CO concentrations had different amounts of COHb in their blood. Degree of poisoning was not always correlated with amount of carboxyhemoglobin.

F-10860

Petry, Heinz
CHRONIC CARBON-MONOXIDE POISONING. [Die chronische Kohlenoxydvergiftung.] Translated from German. Arbeitsmedizin (Leipzig), No. 29, p. 1-129, 1953, 251 refs.

Chronic CO poisoning is discussed in an extensive review of the world literature, with special reference to Scandinavian findings, as well as original observations. The chemical properties, occurrence, determination, normal blood and cell level of CO and the role of smoking are described. The physiological action and metabolism of CO in the body are examined and graphically illustrated. The largest segment of the review is devoted to the symptomatology of chronic CO poisoning, with a covering of neurological and psychological symptoms, endocrine disturbances, and gastrointestinal and cardiovascular symptoms. Diagnosis and differential diagnosis is discussed, with a presentation of ten sample cases. Other aspects treated include CO tolerance and sensitization, pathological anatomy, patho-physiology, course of the disorder, prognosis, therapy, and prophylaxis. It is concluded that carbon monoxide doses below 0.005 percent-volume do not impair health.

F-10862

Lapresle, Jean and Michel Fardeau
LEUKOENCEPHALOPATHIES CAUSED BY CARBON MONOXIDE POISONING--STUDY OF 16 ANATOMICAL-CLINICAL OBSERVATIONS. [Les leucoencephalopathies de l'intoxication oxycarbonee--Etude de seize observations anatomocliniques.] Translated from French. Acta Neuropathologica (Berlin), Vol. 6, p. 327-348, 1966. 24 refs.

This article discusses the lesions of the white matter of the brain in acute carbon monoxide intoxication through 16 reports analyzing such attacks. These highly technical reports, with considerable detailed figures and diagrams, conclude that the myelinopathy of Grinker is only a part of the lesion continuum formed, but that many factors speak in favor of vascular disorders which would appear to be responsible for the brain lesions due to carbon monoxide intoxication.

F-10868

Schlipköter, H. W.
EFFECT OF AIR POLLUTION ON MAN. [Wirkungen von Luftverunreinigungen auf den Menschen.] Translated from German. Lufthygiene in Dortmund, March 1965, p. 26-34.

In a broad-ranging review of the literature on specific medical effects of air pollutants on experimental animals and man, the deleterious action of nitrogen oxides, carbon monoxide, sulfur dioxide benzopyrene and dust are discussed in detail and illustrated by graphs and tables. The concentrations of SO_2 benzopyrene and dust in German towns such as Bochum and Düsseldorf are tabulated. Special emphasis is given to the problem of combined synergistic - or antagonistic-effects of several pollutants. As one example, the inhibition of lung clearance of dust by SO_2 in rats is pointed out. Experimental details are carefully related, but citations to the literature are not furnished except by reference to names of investigators.

F-10869

Cis, C. and G. Perani
COCHLEOVESTIBULAR FUNCTION IN CARBON MONOXIDE POISONING. [La funzionalita' cocleo-vestibolare nell'ossicarbonismo.] Translated from Italian. Arch. Ital. Otol. Rinol. Laringol. (Milan), Vol. 75, p. 635-643, Sept.-Oct. 1964. 59 refs.

A group of 50 patients was examined for mental, audiological, and vestibular deficits. Subjects included 15 persons being treated for CO poisoning, and 35 persons under study for suspected chronic CO poisoning or examined for postmortem evaluation of acute poisoning. As with CS_2 poisoning, prolonged exposure to CO presents an objective vestibular pattern with involvement of the nucleo-reticular structures. CO poisoning does not seem to cause sufficient damage to limit the field of comfortable social hearing. Exposure of CO does, however, cause irreversible alterations of the vestibular apparatus, with polymorphous vestibular effects, or in polymorphous vestibular effects, or in prolonged exposure to CO, with nucleo-reticular involvement.

F-10870

Desoille, H. and R. Boncour
INVERSION OF ALBUMIN-GLOBULIN RATIO DURING EXPERIMENTAL CHRONIC POISONING BY CARBON MONOXIDE. [Inversion du rapport albumine-globuline au cours de l'intoxication chronique experimentale par l'oxyde de carbone.] Translated from French. Arch. Maladies Profess. Med. Travail Securite(Paris), 25 (1-2):5-7, Jan. - Feb. 1964.

The effect of carbon monoxide poisoning in rabbits on quantitative changes in protein serums was studied experimentally, using two animals in each of three three-month series. Analyses included total protein as well as the separate albumin and globulin fractions (gamma, and alpha-beta globulins). Very significant temporary changes in amounts of albumin fractions were observed at variable periods - in most cases favoring a parallel increase in alpha-beta globulins. The result is an inversion of the albumin/globulin ratio which is variable in duration and is a function of the carbon monoxide dose administered. The series of rabbits which received 250 ppm CO, showed their albumin/globulin inversion of the 53rd day and it lasted one week; the series which received 450 ppm, in contrast showed an inversion on the 25th day and it lasted much longer, about three weeks. This reactive intervention of humoral protein is so effective, that it causes the original equilibrium to be re-established, and even exceeded.

F-10871

Moureu, H.
VARIOUS ASPECTS OF POLLUTION BY EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES. [Les divers aspects de la pollution par les gaz d'echappement des moteurs a combustion interne.] Translated from French. Rev. Pathol. Gen. Physiol. Clin. (Paris), 61(729):915-931, July 1961. 25 refs.

Composition of exhaust gases from gasoline engines is discussed, as are the chemical reactions involved in the formation of photochemical smog. Various aspects of pollution by motor vehicles are reviewed, including acute levels, low levels, and localized high levels. In a study of 1,605 persons, 38 percent of the motor vehicle drivers who had been in an accident had serious levels of 4.8-6.4 percent COHb. It is proposed that many accidents which are believed to have been caused by the effects of alcohol may actually have been caused by the effects of CO.

F-10872

Pattono, R., G. Marchiaro, F. Capellaro, and G. Orione
THE DYNAMICS OF CO ELIMINATION IN VARIOUS RESUSCITATION CONDITIONS. [Dinamica della eliminazione del CO in varie condizioni di rianimazione.] Translated from Italian. Rass. Med. Ind. (Rome), Vol. 33, p. 456-457, May-Aug. 1964.

Anesthesized dogs were held under narcosis with oxygen and ether while being subjected to mixtures of air and CO (0.8-2.0 percent CO). When resuscitated by inhalation of air, COHb level dropped about 40 percent in 20 minutes, but only dropped another 13 percent in the next

50 minutes. When pure O_2 was used, CO levels dropped 58 percent in 20 minutes and another 12 percent in the next 50 minutes. When O_2 and air were used in conjunction with hypothermia (32° C.), the CO elimination rate was somewhere between the two previously noted rates.

F-10873

Sklenovsky, A.
FREE AMINO ACID CHANGES IN THE RAT BRAIN IN ANOXIA INDUCED BY CARBON MONOXIDE. [Zmeny volnych aminokyselin v mozky krys za anoxie zpusobene kyslicniken uhelnatym.] Translated from Czech. Activitas nervosa super. (Prague), 6(3):272-275, 1964. 20 refs.

A significant decrease in glutamic acid (by 15 percent), glutamine (by 16 percent), serine, and glycine, and a significant increase in alanine were found after a 25 minute exposure to CO anoxia in rats. The gamma-aminobutyric acid level was not changed. The results are related to stimulation of glycolysis and simultaneous depression of the aerobic oxidation of glucose in the Krebs cycle. The observed changes may be partly responsible for functional brain disorders in anoxia.

F-10874

Gaultier, M., E. Fournier, P. Gervais, and F. Bodin
PANCREATIC ENCEPHALOPATHY OCCURRING AFTER CARBON MONOXIDE POISONING. COMPARISON WITH POST-INTERVAL ENCEPHALOPATHY FOLLOWING CARBON MONOXIDE POISONING. [Encephalopathie pancreatique survenue au decours d'une intoxication oxycarbonee. Comparison avec l' au decours d'une intoxication oxycarbonee. Comparison avec l' encephalopathie post-intervallaire de l'intoxication oxycarbonee.] Translated from French. Presse Med. (Paris), 72(54):3263-3265, Dec. 1964. 15 refs.

A case report is presented of a woman who recovered following a suicide attempt with city gas. The case was complicated by the management of severe digestive and humoral disorders with hyperglycemia and strongly elevated amylemia. Case history included a gastrectomy for a gastric ulcer ten years previously. Diagnosis was acute pancreatitis.

F-10875

Strzelczyk, P. and H. Zenk
PERMANENT SUBTOXIC EFFECTS OF CARBON MONOXIDE ON THE HEARING AND EQUILIBRIUM APPARATUS IN GAS PLANT WORKERS. [Permanente subtoxische CO-Einwirkungen auf das Hör- und Gleichgewichtsorgan bei Gaswerkarbeitern.] Translated from German. Arch. Klin, Exp. Ohren Nasen Kehlkopfheilkunde (Berlin), Vol. 184:81-92, May 29, 1964. 22 refs.

To obtain early recognition of slowly developing chronic CO poisoning in a gas works, complaints from 51 exposed workers were collected and audio-metric and vestibular function tests performed. Occupational exposure was to 0.01 percent or more CO. Compared with a group of controls, subjective complaints of the CO-exposed group amounted to 84 percent compared to 47 percent Vestibular symptoms of the CO-exposed group amounted to 68 percent, compared to 11 percent. Audiometric examinations showed a definite lowering in the high frequency range of the age-dependent physiological hearing curve in the exposed workers. Audiometry revealed corti damage in 6 cases, and retroganglionic damage in four.

F-10877

Helmchen, H. and H. Künkel
FINDINGS ON RHYTHMIC POTENTIAL FLUCTUATION IN OPTICAL EVOKED RESPONSE IN THE HUMAN EEG. [Befunde zur rhytmischen Nachschwankung bei optisch ausgelösten Reizantworten (evoked responses) im EEG des Menschen.] Translated from German. Arch. Psychiat. Nervenkrankh. (Berlin), Vol. 205: 397-408, 1964. 21 refs.

Various aspects of a rhythmic potential fluctuation (rhythmic after-fluctuation) are described which frequently develop within an optically triggered stimulus response directly from the secondary component. The findings point to the fact that essential properties of this rhythmic after-fluctuation are influenced by the brain stem structures. This is demonstrated in the case of the general change in the EEG after CO intoxication, in the case of the anomalous occipital 3-4 cycles/sec. rhythm and in paroxysmal dysrhythmia as well as general changes under Perazin treatment.

F-10879

Bruin, A. de, D. Vroege, and A. van Haeringen
CARBON MONOXIDE ABSORPTION BY TRAFFIC POLICEMEN. [Onderzoek naar de opname van koolmonoxyde bij verkeersagenten.] Translated from Dutch. Tijdschr. soc. Geneesk. (Assen), 43(5):146-151, March 1965. 15 refs.

An investigation of 36 nonsmoking traffic policemen shows that for an average traffic exposure of 2.5 hr between May and August, 1964, the average COHb level rises from 0.93 to 1.10 percent. This increase is greater for persons with 3-4 hr exposure than for persons with only two hr. Air measurements indicate a range of 5-15 ppm during periods of high traffic activity.

F-10880

Sterz, H.
ON HEMOGLOBINOPATHIES. [Über Hämoglobinopathien.] Translated from German. Med. Klin. (Munich), 58(42):1705-1709, Oct. 15, 1963.

As part of a review of hemoglobin types and hemoglobin anomalies, the formation of COHb is mentioned as a very important alteration of the hemoglobin. COHb is bright red and has absorption lines in the spectrum at 568 and 539 μ. The clinical symptomalogy is provided. Permanent damage may result from COHb levels above 20 percent, and for that reason 20 percent has been called the toxic limit.

F-10881

Taniewski, J. and R. Kugler
U-SHAPED AUDIOMETRIC CURVE IN CARBON MONOXIDE POISONINGS. [Audiometrische Kurve in U-Form bei Kohlenoxydvergiftungen.] Translated from German. Monatsschr. Ohrenheilk. Laryngo-Rhinol. (Vienna), 98 (7):298-301, 1964. 5 refs.

The hearing of 35 patients up to seven years after CO intoxication was tested. In 31 patients, the audiometric curve for both sides took on the shape of a U of varying size, corresponding in each case to the degree of loss of hearing. The greatest loss of hearing took place at 2048 Hz. The U-shaped curve occurs rarely in the general population, but has been noted in children born in asphyxia and in children whose mothers came down with measles during pregnancy. It is concluded that the U-shaped curve is often observed in CO intoxications because of damage to the central organ of hearing.

F-10882

Schleusing, Gottfried
EFFECT OF HYPOXIA OR ANOXIA ON THE MINERAL METABOLISM IN THE MYOCARDIUM AND SKELETAL MUSCLES. [Der Einfluss der Hypoxie oder Anoxie auf den Mineralstoffwechsel der Herz- und Skelettmuskulatur.] Translated from German. Z. Inn. Med. (Leipzig) 19(21):820-822, 1964. 18 refs.

Mineral metabolism investigations on the heart and skeletal musculature of 50 rats, of which 10, were intoxicated with HCN, CO, N_2, or CO_2, revealed that the heart musculature and the skeletal musculature behave in opposite ways. After CO intoxication the intracellular potassium content of the skeletal musculature drops; on the other hand, it remains constant in the heart muscle. On the other hand, HCN, CO_2, and N_2 lead to a reduction in the intracellular potassium of the heart musculature at unchanged potassium content in the skeletal muscle. The causes for this are discussed in terms of oxygen shortage.

F-10883

Larcan, A., J. Leclére, L. Picard, and D. Malarde
VARIATION OF THE GLUCIDIC ASSIMILATION COEFFICIENT IN THE COURSE OF VARIOUS STRESSES. [Étude des variations du coefficient d'assimilation glucidique au cours de diverses agressions.] Translated from French. Diabéte (Le Rainey), Vol. 11, p. 275-281, Aug.-Sept. 1963. 26 refs.

Glucose assimilation studies were carried out in 32 patients who had undergone acute medical stress (such as infection, intoxication, renal insufficiency) but who, with few exceptions, were not known diabetics and had no hereditary predisposition toward diabetes. The subjects were 11 patients with myocardial infarction, 7 with acute carbon monoxide intoxication, and 14 cases of miscellaneous stresses. The existence of transitory perturbation in peripheral glucose assimilation was observed in 7 of the 11 infarction cases and in 28 out of 38 tests carried out. This perturbation, which corresponds neither to a preexisting diabetes, nor to the revelation of creation of acute diabetes, disappears during clinical and biological improvement in the post-stress syndrome. It is concluded that every stress justifies a prescription of insulin in small doses.

F-10884

Kistov, V. V., L. A. Tiunov, and G. A. Vasil'eva
EFFECT OF CHRONIC CARBON MONOXIDE INHALATION ON ANIMAL RESISTANCE TO ROENTGEN RAYS EXPOSURE. Translated from Russian. Gigiena Truda i Prof. Zabolevaniya (Moscow), Vol.7, p. 54-55, June 1963. 12 refs.

Chronic inhalation (2 hrs/day for 15 days) of carbon monoxide in concentrations, e.g. 2 mg/l, which elicited CO intoxication, lowered the resistance of white mice to X-ray irradiation. In contrast, chronic 0.01 mg/l inhalation of CO in nontoxic concentrations e.g. 0.01 mg/l by white rats (sic), had no effect on the animals' resistance, even when carried on for 60 days. Paradoxically, when the dose of CO was reduced to 0.005 mg/l two hours daily for 60 days, the experimental animals' resistance was enhanced. This enhanced resistance to X-rays seems in no way to be connected with the hypoxemic mechanism of CO action reported by other authors, since the degree of hypoxemia in test and control mice was the same, 1.5 percent.

F-10889

Biget, P. L., J. Fabre, and A. Vauzelle
THE PROBLEM OF ATMOSPHERIC OZONE AND ITS AERONAUTICAL INCIDENCES. [Le problème de l'ozone atmosphérique et ses incidences aéronautiques.] Translated from French. Rev. Med. Aeron., 4(15):66-76, 1965. 60 refs.

The properties of ozone, its chemical properties, and its toxic threat to humans in the upper atmosphere are discussed. A complete bibliographical study is presented, with the conclusion that more research is needed on the problems posed by intoxication due to ozone, although its toxic effects when encountered by humans in the upper atmosphere (e.g. during air travel) seem to have been effectively countered by modern ozone filters.

F-10890

Grashchenkov, N.E. and K. F. Elenevskii
CARDIOVASCULAR SYNDROME. [Serdechno-sosudistyi sindrom.] Translated from Russian. Profess. Bolezni. (Moscow), 1964, p. 103.

Deleterious effects of lead on the renal and cardiovascular systems of workers in lead factories are discussed. Observations in recent years at the Institute of Industrial Hygiene and Occupational Diseases of the Academy of Medical Sciences of the USSR showed that the so-called "lead kidney", as well as "early arteriosclerosis" in workers who come in contact with lead "belong to the past". In fact, in a considerable number of workers examined, a tendency toward a lowering of the level of maximal arterial pressure was noted, with the number of cases of hypotension proportional to the increase in degree of poisoning. Oscillometric data did show an increase in mean arterial pressure (and also in venous pressure) in some of the individuals examined.

F-10891

Medved, L. I.
HYGIENE AND TOXICOLOGY OF NEW PESTICIDES AND CLINICAL ASPECTS OF POISONING. [Gigiyena i toksikologiya novykh pestitsidov i klinika otravlenity.] Translated from Russian. Moscow, State Publishing House of Medical Literature, 1962, 143p.

A compilation of 92 conference papers on the occurrence, detection, toxicology and public health aspects of various pesticides, gaseous disinfectants and related chemicals, is presented. Topics covered include general problems, such as effect of poisons on endocrine organs, and methods of calculating permissible concentrations; prophylactic occupational health measures in the production of chemical herbicides and insecticides (e.g. organic phosphorus compounds); air contamination during ship fumigation; determination of methyl bromide in the air; toxicologic characteristics of organic chlorine insecticides and similar compounds; normalization of DDT analogues; and determination of maximum permissible concentrations of compounds such as ether sulfonate (sic). Four separate series of papers are devoted to the experimental toxicology of organic phosphorus insecticides, organic chlorine insecticides, herbicides and defoliants, and dessicants. The volume ends with a series of papers on the clinical picture and therapy of pesticide intoxication.

F-10892

Del Vecchio, V., S. d'Arca, and M. Talenti
CARBON MONOXIDE POISONING AND CARBON MONOXIDE IN THE ATMOSPHERE OF THE CITY OF ROME. [L'ossicarbonismo, e l'ossido di carbonio nell'atmosfera della citta di Roma.] Translated from Italian. Nuovi Ann. Igiene, Microbiol. (Rome), 7(2):81-102, March-April 1966. 67 refs.

The problem of carbon monoxide poisoning is discussed in detail. Findings on the effects of exposure, for various concentrations and lengths of time, on humans are presented. Measurements in the city of Rome as well as other studies throughout the world are cited. Samples and measurements taken in Rome between November 1954 and October 1955 revealed CO pollution rates ranging from 0.001 to 0.015 percent. The problem of carbon monoxide poisoning is viewed along with other forms of pollution from the stand-point of public health.

F-10893

Boedicker, Wilhelm
EXPERIMENTAL STUDIES ON THE QUESTION OF CHRONIC CARBON MONOXIDE POISONING. [Experimentelle Studien zur Frage der chronischen Kohlenoxydvergiftung.] Translated from German. Arch. Hyg. Bakteriol. (Munich), 107(1):318-336, Oct. 1931. 29 refs.

The role of acidosis as a manifestation of chronic, as well as acute carbon monoxide intoxication was studied with two series of rabbits, one of 20 and one of 30 animals. After elimination of the more susceptible animals, a concentration of 0.25 percent CO was used, with an inhalation time of 1-1/2 hours a day. The reserve alkali index of the plasma, determined manometrically, was affected significantly by the state of hunger of the animals. However, these determinations as well as cholesterol determinations proved unsuitable for the detection of chronic carbon monoxide intoxication. Definite changes were observed, however, upon determination of erythrocyte resistance, and of the serum phosphatide value. The paper is carefully documented with specific data, tables and figures.

F-10894

Boedicker, Wilhelm
EXPERIMENTAL INVESTIGATIONS ON CHRONIC CARBON MONOXIDE POISONING. II. BLOOD SUGAR AND BLOOD-SUGAR CURVE IN EXPERIMENTAL CARBON MONOXIDE POISONING. [Experimentelle Studien zur Frage der chronischen Kohlenoxydvergiftung. II. Blutzucker und Blutzuckerkurve bei der experimentellen Kohlenoxydvergiftung.] Translated from German. Arch. Hyg. Bakteriol. (Munich), Vol. 109, p. 124-134, 1933. 7 refs.

Sufficiently significant variations in fasting and normal rabbit blood sugar levels, determined by the Hagedorn-Jensen method, were observed to suggest abandonment of the assumption that mammalian blood sugar content under physiological conditions is a constant and species-specific quantity. Similarly, in animals exposed to carbon monoxide variations up to 50 percent were noted. This fact limits the significance of about 50 determinations in which experimental CO-exposed animals showed a mean blood sugar value of 124mg percent and showed a mean blood sugar value of 124mg percent and control rabbits a mean of 106mg percent. It may be assumed however that carbon monoxide did influence blood sugar regulation. Additional studies, involving glucose tolerance tests, are discussed in detail, to show the effect of CO on the blood-sugar regulating organs, such as the suprarenal gland. An unexpected reaction of a control animal indicated that a particularly high, or somehow abnormal, blood sugar curve is not one of the detailed manifestations of chronic CO poisoning.

F-10895

Gilula, I. O.
THE EFFECT OF CARBON MONOXIDE ON THE NERVOUS SYSTEM. [Die Einwirkung von Kohlenoxyd auf das Nervensystem.] Translated from German. Deut. Z. Nervenheilkunde (Leipzig), Vol. 116, p. 237-239, 1930.

Carbon monoxide poisoning experiments on dogs, cats, rabbits, guinea pigs, mice, pigeons, and frogs using concentrations of the gas from 0.4, 0.5, and 0.8 are reported. A syndrome of chronic CO-poisoning was not observed. It is concluded that carbon monoxide acts on the nervous tissue causing degenerative changes; and that a relative selectivity of the toxin in regard to a few cerebral regions seems to be a result of a particular biochemistry of the respective cerebral regions of the whole brain due to which the nervous tissue has an unequal resistance to the action of the gas.

F-10896

Oba, Saburo
EXPERIMENTAL CONTRIBUTIONS TO THE KNOWLEDGE

OF BRAIN CHANGES IN CARBON MONOXIDE POISONING. [Experimentelle Beiträge zur Kenntnis der Gehirnveränderungen bei Kohlenmonoxydvergiftung mit besonderer Berücksichtigung der Lipoide.] Translated from German. Nippon Byori Gakkai Kaishi (Transactions of the Japanese Pathological Society) (Tokyo), No. 22, p. 846-853, 1932.

Findings from experiments with rabbits showing the brain damage resulting from carbon monoxide poisoning are presented. Various methods of examining the relative degeneration of brain tissues are outlined in detail, and note is made of the inhibiting effects that an excess of cholesterol seems to have on the degenerative process produced by the CO gas.

F-10898

Sirtori, Carlo
CONTRIBUTION TO A SATISFACTORY SOLUTION OF THE PROBLEM OF AIR POLLUTION. (WITH PARTICULAR REGARD TO LUNG CANCER). [Par una soddisfaconte soluzione del problema degli inquinamenti atmosferici (con particolare reguardo al cancro polmonare).] Translated from Italian. Minerva Med. (Turin), 47(76): 3-11, 1956. 2 refs.

The relationship between the high incidence of lung cancer in urban areas and the high proportion of chemical pollutants in the air of urban areas is discussed. Automobile exhaust and fumes from the combustion of coal and naphtha in heating plants are indicated as the prime causes of pollution; the latter is cited as easily controllable and the purification of the fumes from heating plants is named as the logical method of reducing pollution.

F-10915

Gramer, L.
THE METHODOLOGY OF VARIOUS CO DETERMINATIONS IN THE BLOOD. [Über die Methodik verschiedener CO-Bestimmungen im Blut.] Translated from German. Aerzt. Lab. (Wuerzburg), 7(12):373-381, 1961. 26 refs.

Due to the possibility of errors it is necessary to determine the CO content in blood by at least two different methods. The following five methods can be used: (1) the spectroscopic test which is a qualitative test and indicates CO contents only if they exceed 26 percent COHb, (2) The Wolff test, a quantitative method based on hemoglobin precipitation while COHb remains in solution, (3) the accurate Roughton and Scholander microgas analysis, (4) a turbidometric method developed by the author which is based on the liberation of metallic palladium determined by a photometer, and (5) the Grosskopf and Sachs method which is useful for preliminary tests. The methods are described and their advantages are discussed.

F-10916

Epelbaum, Felix
EFFECT OF ACUTE AND CHRONIC CO AND CO_2 INTOXICATION ON THE SPIDER ZILLA-X-NOTATA CL. AND ITS WEB BUILDING. [Die Wirkung akuter und chronischer Kohlenoxyd- und Kohlendioxyd-Vergiftung auf die Spinne Zilla-X-Notata Cl. und ihren Netzbau.] Translated from German. Arch. Intern. Pharmacodyn. (Ghent), 106(3):275-293, 1956. 25 refs.

In a study of CO intoxication, Epelbaum addresses the problem of whether the deficiency of oxygen in the tissues, induced by carbon monoxide, can be an explanation of all the observed effects of the gas. After discussing the problems of specific CO or CO_2 poisoning and literature dealing with chronic carbon-monoxide poisoning, experiments on spiders are described evaluating behavior during the period of poisoning as well as feeding and web spinning after poisoning. A large number of objective measurements are illustrated by charts and figures to describe the lack of proof of irreversible poisoning by CO or CO_2.

F-10918

Moeschlen, S. and W. Wildermuth
THE BEHAVIOR OF THE BLOOD SUGAR IN EXPERIMENTAL CO INTOXICATION AND IN NITROGEN INHALATION. A CONTRIBUTION TO THE QUESTION OF THE SPECIFIC TOXIC EFFECT OF CARBON MONOXIDE. [Das Verhalten des Blutzuckers bei der experimentellen CO-Vergiftung und bei der Stickstoffatmung. Ein Beitrag zur Frage der spezifisch toxischen Wirkung des Kohlenoxyds.] Translated from German. Arch. Exp. Pathol. Pharmakol. (Berlin), Vol. 198, p. 417-419, 1941.

Experiments with rabbits who were exposed to CO-air mixtures in gas chambers for 1/2 to 1 hr showed that the blood sugar level increased above normal and was maximum about 1/2 hours after exposure. Then after 2-1/2 hours the blood sugar level decreased to normal. A marked increase in blood sugar was found even in cases when the COHb content amounted to only 20-25 percent. Experiments with nitrogen-oxygen mixtures showed that even under severe anoxemia no rise in blood sugar was noted. Therefore, the increase in blood sugar level is due to the specific effect of carbon monoxide and not to the lack of oxygen.

F-10920

Justin-Besancon, L., Ivan Bertrand, and Frederic Pergola
CARBON MONOXIDE COMA WITH PROLONGED HYPERTHERMIA. [Coma oxycarbone avec hyperthermie prolongee.] Translated from French. Bull. Mem. Soc. Med. Hosp. Paris (Paris), Vol. 59, p. 430-432, 1943.

Four brief case histories of carbon monoxide or illuminating gas poisoning, are presented. All of the patients were dramatically awakened from a coma by injection of novocaine. Laying no claim to conclusive evidence of any successful new treatment, a therapy deserving of further research is outlined.

F-10921

Petry, H.
PRESENT STATE OF KNOWLEDGE CONCERNING CHRONIC CARBON MONOXIDE POISONING. [Gegenwärtiger Stand unseres Wissens über die chronische

Kohlenoxydvergiftung.] Translated from German. Arch. Gewerbepathol. Gewerbehyg. (Heidelberg), Vol. 18, p. 22-36, 1960. 46 refs.

Industrial and clinical physicians disagree as to whether there is such a thing as chronic carbon monoxide poisoning. Opponents of the notion contend that the pathophysiological mechanisms during exposure to CO do not correspond to those of "true" chronic poisonings. Supporters of the concept insist that it is based primarily on practical, clinical results. Examples are presented which suggest that the terms "acute" and "chronic" can both be applied to the following phenomena: exposure time to the damaging agent, the developmental phase of the disease, the course of the disease, secondary phenomena, and therapeutic measures. Other sections of the paper discuss (1) recent knowledge concerning clinical symptoms of chronic CO poisoning, (2) recent experimental results concerning the effects of CO, (3) the pathophysiology of chronic CO poisoning, and (4) the diagnosis of chronic CO poisoning. It is concluded that there is no need to eliminate the term "carbon monoxide poisoning."

F-10922

Messmer, E.
TOXIC EFFECTS OF MAN OF PROLONGED, CONTINUOUS EXPOSURE TO VERY LOW CONCENTRATIONS OF CARBON MONOXIDE. [Zur Frage der Toxicität kleinster Kohlenoxydkonzentrationen bei langer dauernder kontinuierlicher Einwirkung auf den menschlichen Organismus.] Translated from German. Arch. Toxikol. (Berlin), Vol. 16, p. 336-340, 1957. 8 refs.

The case history is outlined of a possible case of chronic carbon monoxide poisoning, describing the lawsuit brought by a couple, who claimed illness due to a high level of carbon monoxide. Concentrations of 0.001 to 0.005 percent of CO were measured in the apartment, but based upon figures quoted from V. Raymond and A. Valland, it is concluded the wife's illness would have required at least a 0.01 percent concentration of carbon monoxide to cause symptoms of dizziness, mild disturbance of consciousness, pressure in the heart region, anxiety, palpitation, and anoxemia. While symptoms of this kind occur in carbon monoxide poisoning, they do not prove the existence of such poisoning.

F-10923

Effenberger, E.
EXHAUST-FUME HAZARDS TO PASSPORT AND CUSTOMS OFFICIALS IN BORDER AREAS. [Gefährdung der Beamten des Passkontroll- und Zolldienstes an Grenzübergängen durch Auspuffgase.] Translated from German. Z. Hyg. (Berlin), Vol. 145, p. 403-421, 1958. 18 refs.

At two German border crossings for private cars, the CO content of the air was measured. Average concentrations were 0.013 Vol percent, with peaks of 0.022 Vol percent. A statistically significant correlation was established between traffic rate and air CO content. The health complaints of the passport and customs officials, which had been observed for several weeks, showed a statistically significant correlation with traffic rate and wind velocity. When the traffic rate was equal, the complaints decreased when the wind velocity increased. This correlation could also be quantitatively determined by means of the regression line. In several of these officials, the blood COHb was determined before, during, and after the period of duty. During duty, increases of an average of 10 percent could be found with maxima of 14 percent COHb. There is no doubt that, in conditions of heavy traffic and no wind the officials at the two border crossings are endangered by the exhaust fumes. Evidently the complaints are attributable to the effects of several components of the exhaust fumes. Appropriate countermeasures are suggested.

F-10924

Krueger, P. D., O. Zorn, and F. Portheine
PROBLEMS OF ACUTE AND CHRONIC CARBON MONOXIDE POISONING. [Probleme akuter und chronischer Kohlenoxyd-Vergiftungen.] Translated from German. Arch. Gewerbepathol. Gewerbehyg. (Heidelberg), Vol. 18, p. 1-21, 1960. 42 refs.

An extensive and detailed discussion of occupationally related carbon monoxide poisoning, including some original data and tables from studies of mine and industrial workers, is presented. The investigations included field studies at work locations containing CO - with control studies from non-polluted locations - and clinical studies on workers exposed to CO. In addition to a critical review of the various CO detection methods and of the toxicological aspects involved, the conclusion is drawn that "chronic carbon monoxide poisoning" per se does not exist. Rather, the concept "light, recurring CO poisoning" expresses the clinical and theoretical condition clearly. The expert should constantly deal with the problem as to what CO concentrations of the blood, and of the air, in conjunction with the time factor, may lead to CO-induced subjective and objective symptoms.

F-10925

Datsenko, I. I.
COMPARISON OF THE RESULTS OF QUANTITATIVE DETERMINATION OF CARBOXYHEMOGLOBIN IN BLOOD BY THE GASOMETRIC, PHOTOMETRIC, AND SPECTROPHOTOMETRIC METHODS. [Sravnenie rezul'tatov kolichestvennogo opredeleniya kapboksigemoglobina v krovi gazometricheskim, foto-i spektrofotometricheskim methodami.] Translated from Russian. Lab. Delo (Moscow), 9(5):8-15, 1963. 13 refs.

Determination of the carboxyhemoglobin content in blood is important for studying carbon monoxide poisonings. The carboxyhemoglobin content in blood of animals with CO poisoning was determined by gasometric, photometric and spectrophotometric methods and the results were compared to evaluate the sensitivity and reliability of the individual methods. The three methods developed by the Departments of hygiene and biochemistry at the Lvov Institute of Medicine were found to be in satisfactory agreement. The photometric method which is most convenient and simple is therefore recommended for general laboratory use.

F-10928

Datsenko, I. I. and I. S. Alycheva
EFFECT OF AEROIONIZATION ON THE IMMUNOBIOLOGICAL REACTIVITY OF THE ORGANISM UNDER CONDITIONS OF CHRONIC CARBON MONOXIDE POISONING. [Vliyanie aerolionizatsii na immunobiologicheskuyu reaktivnost organizma v ushoviyakh khronicheskoi intoksikatsii okisyu ugleroda.] Translated from Russian. Vrachebnoye Delo (Kiev), Vol. 7, p. 149-150, 1964.

The effect of aeroionization on the immunobiological reactivity of the organism during chronic carbon monoxide poisoning was studied with 52 albino rats. One group was exposed to carbon monoxide only, another group obtained 30 min. of aeroionization after carbon monoxide poisoning and the third group served as control. Before the experiment all animals were vaccinated three times at 7-day intervals with killed typhoid vaccine. The results showed that the hemoglobin content was 75-85 percent in all three groups. The agglutinin titres were maximum in all three groups on the 23rd day after the third vaccination. The agglutinin titre in the poisoned animals was 2.5 times lower than in the control group and 3 times lower than in the group treated with aeroions. Thus, the use of aeroions neutralizes the effect of carbon monoxide and aeroionization has a favorable effect on chronic carbon monoxide poisoning.

F-10929

Kovnatskiy, M. A.
CLINICAL STUDY OF CHRONIC CARBON MONOXIDE POISONING. [Klinika Khronicheskoi Intoksikatsii Okisyu Ugleroda.] Translated from Russian. Gig. Truda i Zabolevaniya (Moscow), No. 10, p. 25-30, 1961. 23 refs.

This review of the general properties of carbon monoxide poisoning and its temporary and possibly chronic effects upon the central nervous and cardiac systems utilizes many reports of other investigations and of 30 individuals whose work involved exposure to carbon monoxide. In some cases, symptoms of chronic carbon monoxide poisoning may progress even after contact with this toxic agent is discontinued. Over half of the subjects presented overt electrocardiographic changes indicative of muscular changes. Symptomatic treatment is given for cases of chronic carbon monoxide poisoning, but investigations of other forms of treatment, i.e. iron preparations and novocaine, should be made.

F-10930

Datsenko, I. I.
CHANGES IN CHOLINESTERASE ACTIVITY IN CARBON MONOXIDE POISONING. [Izmeneniya aktivnosti Kholinesterzy pri oksyglerodnoi intoksikatsii.] Translated from Russian. Vrachebnoye delo, (Kiev), Vol. 11, p. 111-114, 1964. 6 refs.

The activity of choline esterase in the presence of carbon monoxide was studied to elucidate the mechanism of carbon monoxide poisoning and find a diagnostic method for determining early carbon monoxide poisoning. Albino rats and guinea pigs were subjected to chronic or acute carbon monoxide and the activity of choline esterase in the brain, heart and liver was determined. The choline esterase activities after acute and chronic poisonings differed considerably. Determination of the choline esterase in the blood of guinea pigs in chronic and acute experiments showed that the choline esterase activity is a sensitive indicator of carbon monoxide poisoning. Its determination is therefore recommended for hygienic and toxicological purposes. The chronic action of carbon monoxide showed also that it directly affects the cells and that it may have adverse effects even in very low concentrations.

F-10931

Anichkov, S. V.
REFLEXES FROM CHEMORECEPTORS UPON ENDOCRINE GLANDS. [Reflexksy s khimioretseptorov na endokrinnye zhelezy.] Translated from Russian. Fiziol. Zh. SSSR (Moscow), 40(4):420-423, Jan.-Feb. 1954. 5 refs.

Based on the results of a long study of the carotid body a hypothesis was developed which explained the nature of reflexes originating from carotid chemoreceptors. The reflexes caused by anozic poisons (cyanide, sulfide), poisons suppressing the respiratory phoshorylation, and by carbon monoxide were studied. The experiments showed that carbon monoxide is a strong stimulant of carotid chemoreceptors. It was shown that stimulation of chemoreceptors causes reflexes acting on the adrenal gland. The effect of nicotine on blood pressure was also found to be caused by reflexes originating from carotid chemoreceptors.

F-11416

Faerber, Klaus-Peter and Alex Hoffmann
FURTHER STUDIES ON THE EFFECTS OF ATMOSPHERIC POLLUTION ON THE HEALTH OF HUMANS. [Weitere Untersuchungen über Einflüsse von Luftverunreinigungen auf die menschliche Gesundheit.] Translated from German. Oeffentlicher Gesundheitsdienst, Vol. 23, p. 17-25, Jan. 1961. 42 refs.

The effect of air pollution on human health was studied by determining the dust fallout and its sulfur content in several German municipalities in the Ruhr region. The serum phosphatase activity of 503 boys in the Oberhausen area was determined. Also hemoglobin values and red blood cell counts were determined in 1805 boys, and lung cancer mortality figures were studied. The results confirm previous conclusions that the children in polluted areas exhibit higher phosphatase values, and an impaired blood count, indicating the possibility of long range damage due to increased light absorption. The lung cancer mortality in Oberhausen increased in 1952-1959 from 30 per 100,000 to 50 per 100,000, thus exceeding values reported in the U. S. It is proposed to record lung cancer and leukemia mortality throughout Germany, in order to establish data baselines for individual communities. Air Quality measurements of dust and sulfur (in terms of SO_4) are tabulated and discussed.

F-11425

Nakamura, Kenichi
RESPONSE OF PULMONARY AIRWAY RESISTANCE BY INTERACTION OF AEROSOLS AND GASES IN DIFFERENT PHYSICAL AND CHEMICAL NATURE. Translated from Japanese. Nichieishi [Japan J. Hyg.], 19(5):322-333, 1964. 37 refs.

Inhalation tests were conducted on 25 healthy males to determine their response in pulmonary airway resistance to the interaction of aerosols and irritant gases. The subjects were divided into 3 groups. Group 1 inhaled SO_2 for 5 minutes, followed by a mixture of SO_2 with a large-size NaCl aerosol. Group 2 inhaled NO_2 for 5 minutes, followed by a small-size NaCl aerosol. Group 3 inhaled NO_2 for 5 minutes followed by a mixture of NO_2 and a large-size NaCl aerosol. The airway resistance (AWR) values immediately after inhalation were measured by the airway interruption technique, and the intensities of the reactions were compared. The control values for the AWR were those prior to the tests. The AWR increased synergistically in groups 1 and 3. In Group 2 the AWR for NO_2 and NO_2 plus aerosol was higher than the control value, and practically no change in reaction was observed when the NO_2 was mixed with the NaCl aerosol. The synergistic effect of an irritant gas and an inactive aerosol is greatest when the aerosol particle size is around 1μ, and the increase in airway resistance in this case is believed to be due to reactive constriction of the respiratory bronchioles and alveolar ducts.

F-11426

Dubrovskaya, [illegible]. I., M. S. Katsenelenbaum, Ya. K. Yushko, G. V. Bulychev, and V. A. Korolova
ATMOSPHERIC AIR POLLUTION WITH DISCHARGES FROM SYNTHETIC FATTY ACIDS AND ALCOHOLS PRODUCING INDUSTRIES AND THEIR EFFECT ON THE HEALTH OF THE POPULATION. [Zagryazneniye atmosfernogo vozdukha vybrosami proizvodstva sinteticheskikh zhirnykh kislot i spirtov i vliyaniye ikh na zdorov'e naseleniya.] Translated from Russian. Gigiena i Sanitariya, 26(12):3-8, Dec. 1961. 5 refs.

Investigations of the atmosphere in Shebekino have revealed it to be intensely polluted up to a radius of 3 km from a synthetic fatty acids and alcohol plant in the Shebekino Industrial Complex. Its discharges contain fatty acids, hydrocarbons, acetone, methanol and formaldehyde. Investigations showed that combustion of exhaust gases occurred at low efficiency, with hydrocarbons, acids and acetones only 30 percent burned. The concentrations of pollutants in escaping gases, and of saturated and unsaturated hydrocarbons, ketones, acetone, and fatty acids in atmospheric air, are tabulated. Construction inadequacies of the furnace used were blamed for the low efficiency of combustion. A complete medical examination of the children in Shebekino shows their health to be somewhat affected by the atmospheric pollution. Diseases of respiratory tract prevail among other affections. It has been determined experimentally that the threshold value of olfactory preception of valerianic acid in most people fluctuates from 0.5 to 1.0 mg per m^3.

F-11437

Tsvetkov, V. P., B. A. Tsybalyskiy, and A. P. Sapozhnikov
INFLUENCE OF DUST ON WORKERS AT THE KASHIRSKIY STATE ELECTRIC POWER STATION. Translated from Russian. Klinicheskaya Meditsina, 11(9-10):458-465, 1933. 8 refs.

The effect of lignite coal dust and ash in the Hashirskiy Electric Power Plant near Moscow on the health of exposed workers was studied. A total of 148 workers were examined. While dust pollution of lungs can occur after only 5 years of work in a power plant, the development of actual pneumoconiosis is considered to require exposure of at least 20 years. It was found that carbon dust and ash from lignite coal originating in the vicinity of Moscow penetrate the pulmonary tissue to cause reactive changes characterizing pneumoconiosis. Clinical details on various sub-groups of the workers, including X-ray findings, are mentioned. The harmful component in both the coal and ash dusts is silica which is present in large amounts. The presence of sulfur anhydride in household dust requires further study. Based on the dust particle concentration, the pollution even in the most hazardous areas of the electric plant is considered moderate. Only 4 cases of pneumoconiosis were found after 10 years of service. Future studies on the effect of dust on children are indicated, on the basis of inconclusive findings on 19 children living in the area.

F-11458

Zenji, Horai
STUDIES ON CHRONIC BRONCHITIS, PULMONARY EMPHYSEMA, AND PULMONARY FIBROSIS. [Mansei kikanshien, haikishu, haisenisho ni kansuru kenkyu.] Translated from Japanese. 1963 Research for Medical Aid by the Ministry of Welfare (Japan), 158 p.

Studies of chronic respiratory diseases related to air pollution carried out by fourteen study groups are reported. Clinical and pathological phenomena of respiratory diseases for two areas with high pollution levels (Tokyo and Osaka City) and a non-polluted area (Nara Prefecture) are compared. Respiratory symptoms were studied in long time residents of the areas studied in employees of commercial enterprises, and in inmates of homes for the aged. Clinical and pathological examinations were also made of patients being treated by medical organizations. Soot accumulation in the pulmonary tissue and pathological changes were investigated in the bodies of accident victims based on area of residence, age, and sex. Specialists in different areas observed levels of air pollution and found a clinical and pathological relationship between soot accumulation in pulmonary tissues and the occurrence of chronic bronchitis, pulmonary emphysema and pulmonary fibrosis. While the different study groups did not investigate identical parameters and patient-groups, their observations generally agreed in correlating the respiratory conditions found with the presence of air pollution in Osaka and Tokyo. Clinically, the incidence of chronic bronchitis seemed high, as did both the incidences of pulmonary emphysema due to abnormal ventilatory function and pulmonary fibrosis observed in x-rays. In one study of subjective respiratory complaints, lowering of ventilatory function, and abnormal linear shadows, no such difference as that found between (the non-polluted) Nara Prefecture and Osaka was seen between Osaka City and its suburbs.

F-11464

Babayants, R. A.
THE RELATIONSHIP OF RESPIRATORY DISEASES AND URBAN AIR POLLUTION. [O zavisimosti boleznei organov dykhaniya ot zagryazneniya gorodskogo vozdukha.] Translated from Russian. Gigiena i Sanit., No. 12, p. 3-11, 1949.

The morbidity of the population in Leningrad from diseases of the respiratory organs was studied. Material was collected from 7 polyclinics which serve as much as 10 percent of the population and which are situated in regions of the metropolitan area differing in degree of air pollution (from clean air, expressed as "up to 150 $g/m^3/yr$ of sediment" to strongly polluted air, expressed as "up to 700 $g/m^3/yr$ of sediment".) A comparison of the results by statistical processing of the morbidity data with data concerning the degree of air pollution, indicate that this morbidity of the population in the microregion with polluted air is higher in an average of 90 percent of the cases than it is in the microregions with clean air; for angina, it is 2 to 3 times higher, for bronchitis, 3 to 5 times, pneumonia, 2 to 3 times, pleuritis, 3 to 4 times, and for diseases of the pharynx and tonsils, 5 to 6 times higher.

F-11468

Scheel-Thomsen, A.
LEAD POISONING OF ANIMALS BY THE EXHAUST FROM MOTOR VEHICLES. [Dyr blyforgiftede af Ubdlaesning fra Motorkøretøjer.] Translated from Danish. Dansk Dyrlaegeforening Medlemsblad (Copenhagen), Vol. 39, p. 596-598, 1956.

Three cases of lead poisoning in dogs are reported. One dog spent considerable time in a large engine shed for motor trains, another spent most of the day in an auto dealer's garage, and the third involved a dog which traveled daily with its owner in an automobile, always lying on the floor of the automobile. The investigation revealed a local stomatitis in two of the dogs. All three displayed tremor in the hindquarters, loss of weight, sluggishness, and albumin in the urine. All three patients reacted promptly to Antoxol treatment.

F-11470

Henschler, D.
PROTECTIVE EFFECT OF PRETREATMENT WITH SMALL GAS CONCENTRATIONS AGAINST FATAL PULMONARY EDEMA CAUSED BY IRRITANT GASES. [Schutzwirkung einer Vorbehandlung mit geringen Gaskonzentrationen gegen tödliche Reizgas-Lungenödeme.] Translated from German. Arch. Exp. Pathol. Pharmacol. (Berlin), Vol. 238, p. 66-67, 1960. 4 refs.

In order to elucidate the mode of effect of irritant gas, the mechanism of a tolerance increase was studied, as it develops following the effect of small gas concentrations. This effect, which is known for phosgene and ozone, was determined also for nitrous gases. These three gases exert a protective effect of differing intensity with respect to each other with the exception of the combination of nitrous gases and phosgene. This protection is consequently neither a principle valid for all combinations of irritant gases, nor is it specific for any one type of gas. This finding permits exclusion of an antibody-antigen reaction as the mechanism involved. The following working hypothesis regarding the mechanism of the protective effect is proposed: irritant gases diffuse through the alveolar wall and only that portion which is not hydrolytically disintegrated exerts an edema-inducing effect, by reacting with structural elements of the pulmonary capillaries. The hydrolysis of acid gas is consequently not, as has often been assumed, the basis for the formation of an edema, but an essential factor of detoxication.

F-11639

Baader, Ernst W.
MANGANESE POISONING IN DRY-CELL FACTORIES. [Manganvergiftungen in Elementefabriken.] Translated from German. Arch. Gewerbepathol. Gewerbehyg., Vol. 4, p. 101-116, 1933. 8 refs.

Dry cell factories utilize large amounts of pyrolusite (MnO_2). Very volatile Mn compounds are liberated in the grinding of the pyrolusite in the mills, exposing workers at the mixing machines in such plants to inhalation of the dust in the mixing operation. Two case histories of confirmed Mn poisoning in two different factories are presented. The first patient showed symptoms of Mn poisoning only after eight and a half years of working as a pyrolusite mixer, while the disease erupted in the second patient after twenty-one months in this occupation. The significance of the demonstration of Mn in stool and urine and the importance of pneumonia among pyrolusite workers are discussed.

F-11642

Belyayeva, L. N.
CHARACTERISTICS OF THE CLINICAL COURSE OF PNEUMONIA RELATED TO BERYLLIUM COMPOUND POISONING. [Osobennosti klinicheskogo techeniya pnevmonii pri intoksikatsii soedineniyami berilliya.] Translated from Russian. Gigiena Truda i Prof. Zabolevaniya, Vol. 9, p. 28-32, March 1965.

Pneumonia, which is the most serious and rather frequent complication of beryllium compound poisoning, appearing in 20% of the cases, develops in the interstitial tissue against the background of toxic lesion to the alveoli and bronchioli, which leads to particle atelectasis and dilation of some parts of the lungs with considerable increase in permeability of pulmonary vessels. The records of 60 patients with this condition were analyzed. The development of pneumonia is usually related to concomitant secondary pneumotropic infection or activation of existing microflora which acquires virulent properties. In view of the significant changes in reactivity of the organism most cases of beryllium related pneumonia have a hypoergic course without significant temperature elevation with moderate leucocytosis or normal leukocyte content, without any special stab-nuclear shift. Arterial hypoxemia, hyperventilation, tendency toward marked tachypnea, tachycordia, hypotension and collaptoid states are observed.

Because of the protracted course of the pneumonia process, there is slow recovery of functional capabilities of the respiratory and hemodynamic systems. A case history is presented to illustrate these characteristics of pneumonia related to beryllium compounds. Treatment with a good response is obtained only with prolonged combined sulfanilamide and antibiotic therapy in conjunction with antiallergic, bronchodilating and cardiovascular agents.

F-11643

Cernik, L., Doan Hong-Hoa, Vu Dinh-Hai, A. Tomsikova, Pham van-Nong, and F. Vymola

EFFECT OF MYCOTIC FLORA ON BRONCHIAL ASTHMA IN TROPICAL CONDITIONS. [Vplyv mykotickej flory na bronchialnu astmu v tropickych podmienkach.] Translated from Slovak. Casopis Lekaru Ceskych., 102(48:1313-1322, Nov. 1963. 38 refs.

The sensitivity to mycotic flora on the part of Vietnamese asthmatics was investigated by examing 61 asthmatic patients plus a control group of 45 healthy individuals. An infectious allergic type of asthma was determined in the majority of cases (88.5 percent) as well as frequent sensitivity to mycotic flora (in 55.7 percent an allergy to mold fungi was found.) In the control group of 45 healthy individuals, sensitivity was significantly less common, while a finding of sarcinae in the respiratory passage was equally frequent for both asthma patients and healthy individuals. A serologic examination performed on half of the asthma sufferers and healthy subjects indicated the presence of complete antibodies against sarcinae to be considerably more frequent in asthma patients and only in isolated cases and in positive titer threshold values in healthy subjects. The use of mycotic antigens for treatment is recommended.

F-11645

Elstad, D.

OBSERVATIONS ON MANGANESE PNEUMONIA. [Beobachtungen über Manganpneumonien.] Translated from German. Eighth International Congress on Industrial-Accident and Occupational Disease. Leipzig, No. 2, p. 1014-1022, 1939.

In the vicinity of a plant for the production of manganese oxides in Sauda, Norway, analysis demonstrated considerable amounts of MnO_2 in the air. Since the establishment of the factory, the community has become known for the high incidence of lobar pneumonia. Mortality in relation to the number of patients is also unusually high. If the total production of the plant is related to Mn content of the air, it is shown that morbidity from lobar pneumonia in the community varies with the total production.

F-11646

Elstad, Dagfinn

FACTORY SMOKE CONTAINING MANGANESE AS CONTRIBUTING CAUSE IN PNEUMONIA EPIDEMICS IN AN INDUSTRIAL DISTRICT. [Manganholdig fabrikkrok som medvirkende arsak ven pneumonia-epidemier i en industribygd.] Translated from Norwegian. Nord. Med., Vol. 3, p. 2527-2533, 1939. 11 refs.

Known formerly for its healthy climate, the town of Sauda, Norway, since the start of industrial activity has had a pneumonia morbidity four times that of the whole country and a pneumonia mortality eight times as great. 32.3 percent of all decreased in the district since 1924 died from this disease. The industrial products of the area are alloys of manganese produced by electrical melting. This operation gives off a considerable amount of smoke. The smoke contains Mn and analysis of lung tissue from dissected individuals shows a considerable increase in Mn content. It is concluded that the abnormal pneumonia conditions must be due to the exposure of the inhabitants, through the factory smoke, to the inhalation of the Mn dust.

F-11648

Gadaskina, I. D., Ye. I. Lyublina, N. A. Minkina, and M. L. Rylova

SOME DATA ON THE INFLUENCE OF CONTINUOUS AND INTERMITTENT EXPOSURE TO CARBON MONOXIDE ON THE ANIMAL ORGANISM. [Nekotorye dannye o vliyanii no organizm zhivotnykh okisi ugleroda v uslov-iyakh nepreryvnogo i intermittiruyu shchego vozdeistviya. Translated from Russian. Gigiena Truda i Prof. Zabolevaniya, Vol. 5, p. 13-18, 1961. 24 refs.

A comparative study was made of the effect on laboratory animals of intermittent and continous exposure to carbon monoxide. In the intermittent experiment animals were exposed 4 hours daily for four months. In the continuous experiments they were exposed to a constant mean concentration of 0.036 mg/l. A carboxyhemoglobin content of 15-16 percent was found during exposure in rabbits exposed intermittently. Twenty hours later, i.e. prior to new exposure, the carboxyhemoglobin content was zero. Animals continuously exposed to carbon monoxide did not exhibit any carboxyhemoglobin. The gas exchange was lower in mice continuously exposed, while intermittently exposed mice showed no decrease in mean oxygen consumption. The ability to work (swimming time) of mice constantly exposed was somewhat higher than of those intermittently exposed. The overall conclusion indicates that fluctuating concentrations of CO are more harmful than exposure to a constant mean concentration of carbon monoxide, even with rare and transient elevation to a level inducing a brief increase in carboxyhemoglobin content in the blood. When evaluating the toxicity of carbon monoxide inside Industrial buildings, the concentration fluctuations should be taken into consideration.

F-11656

Lampert, F. F.

HYGIENIC EVALUATION OF LIVING CONDITIONS IN APARTMENTS ABOVE STATIONARY BOILERS. [Gigienicheskaya otsenka uslovii prozhivaniya v kvartirakh nad vstroennymi kotel'nymi.] Translated from Russian. Gigiena i Sanit. (Hygiene and Sanitation), No. 7, p. 14-18, 1956.

The air in eleven apartments and one area in a children's home situated above boiler rooms utilizing solid fuel were analyzed for CO and SO_2. Eleven other apartments and one room in the children's home located in the same building but in areas away from the boiler rooms served as controls. The air in apartments located above boiler rooms was much more polluted by CO and SO_2 than air in the control apartments. The frequency of detection and the concentration increase during cleaning of the boilers indicated that the boiler room was the source of the pollution. In order to study the effect of the air on the carboxyhemoglobin level three groups of persons were examined: 22 janitors, 56 persons who lived above boiler rooms, and 63 children from areas with no stationary boilder room. The tests, adjusted for a 6 percent COHb level in all city dwellers, showed that children living in buildings with no stationary boiler had a carboxyhemoglobin concentration of less than 6 percent in the overwhelming majority of samples. In persons living above boiler rooms the number of positive samples amounted to 34 percent. Most of the samples with concentrations above 6 percent were found in janitors (64 percent.)

F-11660

Oltramare, M., M. Tchicaloff, P. Desbaumes, and G. Herman
CHRONIC MANGANESE POISONING IN TWO ARC WELDERS. [Intoxication chronique au manganese chez deux soudeurs a l'arc.] Translated from French. Int. Archiv. fur Gewerbepathologie und Gewerbehygiene, Vol. 21, p. 124-140, 1965. 12 refs.

Two arc welders with more than 25 years of job experience showed ordinary subjective symptoms such as asthenia, dizziness, headaches, profuse sweating, as well as disturbances in walking in one case and slight cerebellar signs in the other. The dosages in the air inhaled by the welders showed concentration of manganese, up to 125 mg/m^3. In the stools of their workmates 2.5 times more Mn was found than is found in normal subjects. Only a thorough study of the neuromuscular electric excitability (intensity/duration curves) and of electromyography made it possible to evidence peripheral nervous lesions in the two patients, i. e. partial denervation. These disturbances in neuromuscular electric excitability seem to appear earlier than the usual clinical signs of manganese intoxication. (Authors' summary)

F-11665

Vigliani, Enrico Carlo
IS THERE SUCH A THING AS "MANGANESE PNEUMONIA"?) Translated from Italian. Folia Medica, 23(9): 451-458, May 15, 1937. 19 refs.

The case of a worker who after ten days of employment as a MnO_2 mill operator came down with pneumonia and died as a result, is reported. Against the background of literature data, the possibility of the existence of so-called manganese pneumonia is considered. It is assumed that the toxic or irritating action of MnO_2 upon the bronchial mucosa would seem to reduce the resistance and thus facilitate the development of pneumonia processes.

F-11667

Yelfimova, Ye. V. and V. S. Shashkov
EFFECT OF ATMOSPHERIC SULFUR DIOXIDE ON SOME BIOCHEMICAL INDICES OF HUMAN BLOOD. [Vliyanie sernistogo gaza atmosfernogo vozdukha na nekotorye biokhimicheskie pokazateli krovi cheloveka.] Translated from Russian. Gigiyena i Sanitariya, No. 3, p. 18-22, 1960. 11 refs.

Two inhabited localities differing in intensity of pollution by industrial waste were investigated for the presence of SO_2. The first locality was 2000 to 3000 meters from a sintering plant and the other 6000 to 7000 meters away. The zone 2000 meters from the main source of emissions was polluted the most by SO_2. The concentration gradually decreased in the following zones. Since the SO_2 concentrations in the air greatly exceeded the permissible limits, the presence of sulfur anhydride in the blood of residents was determined. At the same time the concentration of sugar and ascorbic acid were also determined. To supplement the chemical studies, the people were questioned about the gas odor. The results of the biochemical analysis of the blood and interviews indicate that SO_2 is an unfavorable health factor, especially in the locality 2000 meters from the sintering plants.

G-6533

Berge, Helmut
EMISSION-CONDITIONED IRON DUSTS AND THEIR EFFECTS ON THE GROWTH AND YIELD OF AGRICULTURAL CROPS. [Emissionsbedingte Eisenstäube und ihre Auswirkungen auf Wachstum und Ertrag landwirtschaftlicher Kulturen.] Translated from German. Luftverunreinigung, No. 2, p. 1-7, 1966. 5 refs.

This experiment shows the effects which large amounts of dusts of industrial origin have on cultivated plants in the system of crop rotation. It may be said with great statistical reliability that no yield-reducing effect of iron dust is to be expected with reference either to the main product or to the by-product of the crops grown under the conditions of the experiment. An actual yield-increasing effect of iron dust on the main product yields may be assumed, but cannot be proved with statistical reliability. Further experiments are required which would take into account what is known of the effects of individual locale and environmental factors.

G-6641

Czaja, Alphons Th.
ON THE PROBLEM OF THE EFFECT OF CEMENT DUST ON PLANTS. [Über das Problem der Zementstaubwirkung auf Pflanzen.] Translated from German. STAUB, 22(6):228-232, June 1962. 31 refs.

The investigation of plants in the sedimentation area of several cement factories definitely proved the formation of cement crusts on the leaves and needles of a wide variety of plants. In other words, it proved the direct action upon the plants. The lime hydrate, which is released during the setting of the cement dust with the water on the surface of the leaf epidermis, however, by definition of the term toxins is a very strong caustic poison and, after penetration through the stomas of the conifer needles or penetration of the upper epidermis of leaves that only have stomas on the other side, directly corrodes the living content of the leaf cells and thus directly damages the plants (leaves). A critical review of the literature and the investigations described here tell us that previous investigations using artificial mechanical dusting of cement preparations over plants, under uncontrolled weather conditions, are not suitable for reasons of methodology and because of the selection of the location for the experiment; these methods are thus not suitable in answering the question as to the direct effect of cement dust upon the plants in the vicinity of cement factories. The action upon the soil is not discussed.

G-6967

Germany Ministry of Labor and Social Welfare, North Rhine-Westphalia.
PREVENTION OF AIR POLLUTION IN THE STATE OF NORTH RHINE-WESTPHALIA. [Reinhaltung der Luft im Land Nordrhein-Westfalen.] Translated from German. 78p., 1965. (Report to the Congress on the Prevention of Air Pollution, Duesseldorf, Germany, April 5-7, 1965.)

A survey of the activities in North Rhine-Westphalia for the prevention of air pollution is reported and the results are summarized. The report includes: (1) history, legal basis, administrative organization, a smog-warning network, and economic problems; (2) Report of the Factory Inspection Dept. (Enterprises subject to approval and other enterprises and working places); and (3) Report of the State Institute for Air Pollution Control and Land Utilization (monitoring of air pollution, techniques for measuring immissions, relationship between emission and immission, technical steps for the restriction of emissions, and the effect of air pollution on soil, vegetation, and animals.

G-8462

Matsushima, J. and M. Harada
SULFUR DIOXIDE GAS INJURY TO FRUIT TREES. V. ABSORPTION OF SULFUR DIOXIDE BY CITRUS TREES AND ITS RELATION TO LEAF FALL AND MINERAL CONTENTS OF LEAVES. Translated from Japanese. J. Japan. Soc. Hort. Sci. (Tokyo), 35(3): 241-246, Sept. 30, 1966. 11 refs.

Two-year-old Satsuma (*Citrus unshiu*), (*C. hassaku*), and Natsudaidai (C. natsudaidai) orange trees were fumigated with a continuous stream of air containing 5, 1, and 0 ppm of sulfur dioxide for 34 days, 2 hours per day. Defoliation increased with increasing concentration of SO_2, although smoke lesions did not occur. The increase in sulfur content of the leaves coincided with defoliation rate. Hassaku and Natsudaidai leaves accumulated more sulfur than Satsuma, but defoliation rate was markedly lower than for Satsuma. The calcium content of leaves decreased considerably and potassium content decreased slightly in all species after fumigation with 5 ppm. In the growing season, from May to June, 1964, the same relationships were observed, but sulfur absorption was markedly higher than in the winter fumigation, in spite of its shorter duration. The calcium content of leaves was not clearly related to the SO_2 level during the growing season, but the potassium content of fumigated trees was higher than in controls. Nitrogen, phosphorus, and magnesium contents were not related to sulfur dioxide concentration. In a later experiment using a fumigation chamber, trees were fumigated with 2 ppm (6 hrs), 10 ppm (12 hrs), 5 ppm (24 hrs), or 2.5 ppm (48 hrs) for a cumulative total of 120 ppm SO_2. The higher the SO_2 level, the more severe was the injury to Satsuma trees. Sulfur content of leaves, however, did not coincide with injury. Therefore, analysis of leaf sulfur content may be useful for evaluating chronic injury, but in acute injury it may not be useful. (Authors' summary, modified)

G-9039

Keller, T. and E. Bovay
GREEN PLANTS DAMAGED BY THE EMISSION OF SO_2. Translated from German. In: Surveillance of the Sulfur Dioxide Content of the Atmosphere. Bull. Eidgenoess. Gesundh., Beilage B, No. 4, p. 48-56, 1966. 10 refs.

In areas of industrial centralization in countries other than Switzerland, it was repeatedly observed that green plants, especially forest trees, were much more sensitive to SO_2 emission than were people. Consequently, a brief review is presented on the type of damage, physiological causes of damage, and methods for ascertaining damage to plant life from sulfur dioxide. (Authors' abstract)

G-9757

Zahn, Richard
INVESTIGATIONS ON PLANT REACTION TO CONTINUOUS AND/OR INTERMITTENT SULPHUR DIOXIDE EXPOSURE. [Untersuchungen über die Bedeutung kontinuierlicher und intermittierender Schwefeldioxideinwirkung für die Pflanzenreaktion.] Translated from German. STAUB (Düesseldorf), 23(7): 343-352, 1963. 12 refs.

Relations between the possibilities of combination in time of given amounts of SO_2 and plant reaction are clarified. Continuous action is discussed and it is demonstrated that the familiar "stimulation-threshold function" of L'Gara and Stratmann do not have general validity. They develop a new equation which is better adapted to the experimental findings. Prerequisite for the analysis is of intermittent gas exposure is knowledge of the trace of the deterioration curve under continuous gas exposure. The experiments furnish the basis for a formula which represents the degree of deterioration as a function of concentration and duration of action. The effects of continuous and/or intermittent exposure have a given relation to each other. The experiments with constant and variable exposure and interruption shown in tables and graphs demonstrated that plant deterioration becomes reduced as a function of the time of recuperation and duration of exposure. The former is limited by a minimum time of recuperation and the latter by the threshold of stimulation. The sum of these individual findings is embodied in a "recuperation function" with the help of which the plant reaction can be calculated in advance from metrologically given data. (Author's abstract, modified)

G-10201

Knabe, Wilhelm
EFFECTS OF AIR POLLUTION ON VEGETATION. [Die Wirkungen der Luftverunreinigung auf die Vegetation.] Translated from German. Report on current problems and research needs as a result of a comparative evaluation of research work in the United States and Central Europe, Sept. 26, 1967, 24 p.

The result of a study tour of research centers for air pollution control in the U. S. and a comparison of the work with research projects in central Europe is reported. Current work on the following problems and research tasks is discussed: 1. Proof of whether or not existing plant damage is caused by air pollution. 2. Proof of air pollution as the cause of recurring plant damage. 3. Delimitation of emission areas (damage zone and danger zone). 4. Establishing the economic losses. 5. Derivation of threshold values. 6. Basic research on the effect mechanism of plant damage caused by air pollution. 7. Causes of resistance. 8. Breeding for resistance. 9. Passive measures in agriculture and forestry.

G-10206

Haut, H. van and H. Stratmann
EXPERIMENTAL INVESTIGATION OF THE EFFECT OF NITROGEN DIOXIDE ON PLANTS. Transaction of the Land Institute of Pollution Control and Soil Conservation of the Land of North Rhine-Westphalia, Essen. [Schriftenreihe der Landesanstalt für Immissions- und Bodennutzungsschutz des Landes Nordrhein-Westfalen, Essen.] Translated from German. No. 7, p. 50-70, 1967. 25 refs.

The effect of NO_2 on plants was studied. Because NO is always present wherever there is NO_2, NO was also introduced into the exposure chambers containing test plants. Included in the tests were various dicotyledons, monocotyledons, conifers, and deciduous plants. Symptoms of damage included necrosis, chlorosis, striping, and spotting. The toxic tolerances of many plants are listed, along with specific damage symptoms for each. Effects of stage of growth and soil conditions are considered. The concentrations of NO_2 which were damaging are compared to the toxic concentrations of SO_2 which have been thoroughly studied in the past.

G-10384

Nikolayevskiy, V. S.
EFFECTS OF SULFUR DIOXIDE ON THE ENZYME ACTIVITY OF TREE LEAVES. [Vliyanie sernistogo na fermentnuyu aktivnost' list'yev drevesnykh rasteniy.] Translated from Russian. Akad. Nauk SSSR Uralsk. Filial Komis. po Okhrane Prirody Trudy (Sverdlovska), Vol 5, p. 19-23, 1966. 17 refs.

From 15 August to 25 September 1963 the activities of the enzymes catalase, peroxidase, and polyphenoloxidase in maple and birch branches 15-18 years old, were subjected to 14 test fumigations in a gas chamber with SO_2 in concentrations of 2×10^{-5} and 2.5×10^{-4}. The purpose of the experiment was to test the thesis that the effects of O-gases on photosynthesis and respiration differ in different types of plants - and especially that the inhibition of dark reactions, but not of light reactions, by SO_2, will carry over to diverse types of enzyme systems. Maple and birch were chosen because not only does the former have a weak reaction to damage and the latter a strong one, but also because they differ greatly in physiological, biochemical, and anatomical characteristics. Catalase activity was lower in the maple than the birch by 32.5 percent, and similar differences were observed with the other two enzymes. (On this basis it is suggested that the intensity of photodynamic oxidation must be proportional to the activity of the redox enzyme systems.) SO_2 depressed the activity of all three enzymes, but catalase was the most severely affected. The difference in effect between the weaker and stronger concentrations was that the weaker increased the enzyme activities on the second day, whereas the stronger decreased it. Thus, the SO_2-induced drop in catalase activity may promote oxidation processes and plant damage through accumulation of organic peroxides (Mikhlin, 1960), but nothing definite can be said about peroxidase and polyphenoloxidase without further testing.

G-10841

Bronsch, K. and N. Grieser
FLUORINE AND FLUORINE TOLERANCES IN FODDER OF DOMESTIC ANIMALS. 2. PATHOPHYSIOLOGY OF FLUORINE AND FODDER TESTS ON DOMESTIC ANIMALS. Translated from German. Berlin-Müncher Tieraerztl. Wochschr. (Hamburg) 77(20):401-408, 1964. 297 refs.

Studies on the effects of fluorine on domestic animals are reviewed in order to come to some conclusion about fluorine tolerance in fodder. The tolerable levels for soluble fluorides are given: 1 mg. F/kg in cattle, 1.5 mg. F/kg. in sheep, 70 p.p.m. in hogs, 100 p.p.m in broilers, and 250 p.p.m. in laying hens. Tolerable levels for slightly soluble fluorides are: 60-100 p.p.m. for cattle, 100-200 p.p.m. for sheep and hogs, and 300-400 p.p.m. for chickens. These levels are slightly lower than those recommended by the National Research Council in America. Effects of fluorides are reviewed; important differences are seen in different types of animals.

G-10843

Grieser, N. and K. Bronsch
FLUORINE AND FLUORINE TOLERANCES IN THE NUTRITION OF DOMESTIC ANIMALS. 1. BEHAVIOR OF FLUORINE IN METABOLISM. Translated from German. Berlin Münch. Tieraerztl. Wochschr. (Hamburg), 77(19):373-379, 1964.

The general effects of fluorine on metabolism are discussed, with special consideration to resorption, tissue storage, and excretion. Major sections of the paper are entitled Distribution of Fluorine in the Blood, Distribution of Fluorine in the Soft Tissues, Deposit of Fluorine in Hard Tissue, Fluorine Excretion Ratios, Effects of Fluorine on Enzymes, Effects of Fluorine on Organ Function, and Actions of Fluorine upon Symbionts.

G-10844

Fric, Fridrich and Jozef Kolek
IMPORTANCE OF SULFUR IN PLANTS WITH REGARD TO SH-GROUP FUNCTIONS. [Vyznam siry u rastlin z hladiska funkcie SH-latok.] Translated from Slovak. Biologia (Bratislava), 17(9):697-704, 1962. 31 refs.

A review dealing with the role of SH-groups in plant organisms is presented. It is based on 31 sources published mostly before 1960. Discussed are: the reduction mechanisms by which sulfates are converted to cistein, the role of sulfur in plant metabolism, the forms in which sulfur occurs in plants, manifestations of a lack of sulfur, redox systems based on the oxidation of sulfhydryl to disulfide groups, the role of α-lipo acids in photosynthesis, the role of α-lipo acids in enzymatic processes, glutathione redox systems, the effect of SH on plant growth and frost resistance, and the role of SH in protecting enzymes from deactivation by radiation.

G-10914

Czaja, Alphons Th.
EFFECT OF DUSTS, SPECIFICALLY CEMENT KILN DUST, ON PLANTS. [Uber die Einwirkung von Stäuben, von Zementofenstaub auf Pflanzen.] Translated from German. Source unknown, p. 106-120, [1966]. 8 refs.

The "aggressive" propensities of cement kiln dust on living cells are examined. The cells discussed include those of the human and animal organisms, but specifically those of plants. Through pictures and graphs of the reaction of cement kiln dust with water, it is shown that chemicals harmful to living cells are produced. The Mnium test is expounded as a means of identifying the harmful types of dust, which are highly alkaline and resistant to carbonization, therefore calling for precautionary measures.

G-10917

Gewitz, H. S. and W. Volker
INHIBITION OF PHOTOSYNTHESIS BY CARBON MONOXIDE AND SUSPENSION OF THE CARBON MONOXIDE INHIBITION BY LIGHT. [Hemmung der Photosynthese durch Kohlenoxyd und Aufhebung der Kohlenoxydhemmung durch Licht.] Translated from German. Naturforsch. (Tuebingen), 18b(8):649-653, Aug. 1963. 5 refs.

Experiments with chlorella pyrenoidosa in an atmosphere of CO_2-argon and CO_2-CO were made to study the inhibition of photosynthesis by carbon monoxide. It was found that cells grown in light show inhibition of photosynthesis by carbon monoxide. Inhibition is reversible and depends on the CO and O_2 partial pressures. Also the effect of the spectral characteristics of light on the inhibition of photosythesis was studied. The experiments indicated that in photosynthesis an enzyme is involved which has an effective group containing iron. This enzyme transports oxygen in photosynthesis. Carbon monoxide inhibits photosynthesis by blinding the iron in the enzyme. The absorption spectrum of the carbon of the photosynthesis was determined. The carbon monoxide compound can be split by light and thus inhibition is stopped.

G-11415

Zahn, Richard
EFFECTS OF SULFUR DIOXIDE ON VEGETATION: RESULTS OF GAS EXPOSURE EXPERIMENTS. [Wirkungen von Schwefeldioxyd auf die Vegetation. Ergebnisse aus Begasungsversuchen.] Translated from German. STAUB, 21(2):56-60, Feb. 1, 1961. 7 refs.

The resistance of different plants to exposure with sulfur dioxide in concentrations varying from 0.15 to 0.8 was studied. Long range tolerance limits were determined in a range from 0.15 to 0.4 ppm for different plants. Also the effects of short duration exposures, the importance of time intervals between exposures, the effects of duration of exposure and concentration, and the combination of toxic and subtoxic concentrations were determined. For a given amount of gas an increase of non-exposure period and an increase in impulse frequency of gas exposure were found to prolong the threshold period after which irritation occurs.

Concentrations below the threshold value were found to enhance the effect of concentration peaks. In all cases a strict distinction had to be made between continuous and intermittent exposure, the latter allowing recuperative pauses within certain ranges of concentration. The plants were divided into the following groups according to their resistance as well as their tolerance: (1) clover type cattle feed, (2) cereals, and (3) rape, cabbage etc. Individual SO_2 immissions cannot be treated by a simple additive process in the determination of gas effects on plants. The manner of their distribution over the diurnal period must be taken into account, along with biological and meteorological factors.

G-11417

Steinhübel, G. and L. Halas
THE DESTRUCTION AND FORMATION OF DRY MATTER AT ELEVATED TEMPERATURES INDUCED IN THE LEAVES OF TREES BY DUST EMISSIONS. [Poruchy v tvorbe susiny pri zvysenych teplotach vyvolanych v listoch drevin prasnou imisiou.] Translated from Slovak. Lesnicky Casopis, 13(4):365-382, 1967. 18 refs.

Experiments were conducted with the tree species Populus nigra and Prunus laurocerasus to determine unfavorable changes in the balance between synthesis and dissimilation of dry matter at elevated temperatures induced in the leaves by foundry dust deposition. The increase or loss in dry weight were determined by the modified leaf half method (increase in weight). The results showed that foundry dust deposited on leaves causes a reduction in the expected increase in dry matter after seven hours of exposure. Removal of the dust deposit resulted in an immediate increase in the production of dry matter. Prolonged dusting was found to cause a decrease in productivity as well as a permanent reduction of the total leaf weight and starch formation. An increase in temperature of the leaf tissue was found due to the absorption of heat rays of solar irradiation by deposited dust. Details of the test results are tabulated and analyzed statistically. It was established that the difference between the increase in dry matter in the clean and contaminated leaves increased in proportion to the temperature elevation, a change evident even at a temperature difference of 2.5 percent C, the average heating power of the dust used. Simultaneously an increase in the intensity of dry matter reduction, or respiration, occurs.

G-11433

Steinhübel, Gejza
THE EFFECTS OF FOUNDRY DUST FROM THE NOVY HUT METALLURGICAL WORKS NAMED FOR KLEMENT GOTTWALD ON THE LEAF MASS. [Pusobeni uletu z NHKG na listovou masu.] Translated from Czech. Acta Musei Silesiae, Series C, Vol. 3, p. 1-9, 1964. 13 refs.

Experiments were conducted with rhododendron, lilac, poplar, oak, lime, and birch tree leaves to determine the effect of neutral foundry dust applied for 6 months on the production of dry matter. The following procedure was used: 9 mm diameter samples from both halves of the leaves were cut out; one half of the leaf was then coated with a mixture of foundry dust and egg white and the other half was left without contaminant. The results showed an obvious decrease in dry matter production in 17 forest and decorative species, with the exception of rhododendron, as reflected by a difference in weight. On the average, the decrease in dry matter in evergreen species amount to 86 percent of the normal increase and 65 percent in deciduous species. Also the total leaf mass after 6 months of exposure was reduced. Thus the negative effect of dust was proved not only to reduce the production of assimilation products but also the leaf tissue. The reasons for this inhibition appear to be of physical nature such as reduction in the light reception by the leaf surface, heating of the mesophyll leaf layer due to heat absorption of the dust coating and the effect of the dust on transpiration.

G-11434

Schoenbeck, Helfried
THE EFFECT OF INDUSTRIAL EMISSIONS ON THE SUSCEPTIBILITY OF PLANTS TO DISEASE. [Beobachtungen zur Frage des Einflusses von industriellen Immissionen auf die Krankheitsbereitschaft der Pfanze.] Translated from German. Berichte aus der Landesanstalt für Bodennutzungsschutz des Landes Nordrhein-Westfalen, [1962?] p. 89-98. 28 refs.

The effect of cement mill dust (containing 36 percent CaO, 15 percent SiO_2) from an electrostatic precipitator on the susceptibility of sugar beet plants to disease was studied in field tests. Scale sketches were made of random samples of beet plants on dusted and non-dusted plots of ground, and a leaf destruction rating, ranging from 0 to 4 was applied. The data and their statistical evaluation are tabulated. The results showed that the incidence of cercospora leaf-spot disease (cercospora beticola) was enhanced in the presence of dust. Also the beet yield from the dusted areas was lower. The cause of the intensified attack by the cercospora fungus was found in the disturbance of the plant's physiological equilibrium due to the dusting. No effect of the dust on sugar content was found but undusted leaves has a higher carotene and crude protein content.

G-11444

Antonelli, Giuseppe
EFFECTS OF FLUORINE IN THE REGIONS CLOSE TO THE INDUSTRIES THAT PRODUCE IT AND ITS TOXICITY IN PROPHYLACTIC AND THERAPEUTIC USES. [Effetti del fluoro nelle regioni prossime ad industrie die sua produzione e tossicita di esso anche negli usi profilattici e terapeutici.] Translated from Italian. Rassegna Trimestrale di Odoontoiatria, 35(2):5-122, April-June 1954. 7 refs.

The effects of fluorine compounds on vegetation, cattle, workmen, and students in the vicinity of a fluorine processing plant were investigated. The techniques and methods used at the plant are described indicating the sources of emission. The entire vegetation found in the surrounding territory, plants and trees, were struck and damaged by the toxic gases. Varing degrees of serious effects and certain evidence of pathological disorders were observed - ranging from types of chlorosis to complete dryness due to a third degree scorching. The crop most affected was Indian corn. Cattle showed signs of organic decline with symptoms of anemia of a chronic character and irritation of the bronchial mucosae and of the main respiratory tracts. None of the workers examined displayed signs of fluorosis. The front teeth of the workers and part of the premolars display dark yellow-green stains. In approximately one-half of the cases the gingival mucosae showed whitish, opaque aspects with some spots slightly reddened, a moderate tumefaction and readily bleeding gums. Caries is absent in most of the subjects with eight years of exposure, and extremely rare in others. The percentage of caries was substantially lower in children in the vicinity of the plant than those of the same age group outside the district. The properties of fluorine, its pharmacology, toxicology, water toxicity, therapy, and prophyaxlis are reviewed.

G-11451

Hoffmann, H.
RELATIONSHIPS BETWEEN INDIVIDUAL CLIMATIC FACTORS IN PIG FATTENING SITES. [Ueber die Zusammenhaenge zwischen den einzelnen Klimafaktoren in Schweinemaststaellen.] Translated from German. Monatsh. Veterinaermed., 21(15):572-578, 1966. 56 refs.

In three standardized fattening sites (pigsties) with gravitational ventilation, which accomodated different numbers of pigs, the following numbers of measurements for each parameter were made: 510 oxygen, 514 carbon dioxide, 516 ammonia, 479 air germ content, 259 temperature, and 258 humidity (relative air humidity). The values were compared in order to determine the relationship between the separate factors and to exhibit the climatic factors which must be taken into consideration when sanitary examination in fattening pig-sties are undertaken. It was found that CO_2 and O_2 levels are inversely related; CO_2 and relative humidity levels are directly related (a satisfactory level of below 80% humidity is associated with 0.20 Vol. % CO_2); CO_2 and germ content is directly related (sanitary) level possible if CO_2 content is limited to 0.15). A low CO_2 content cannot be taken as valid proof of sufficient air circulation. High germ counts and high dust concentrations are associated with feeding of dry non-polletized feed. Ammonia content is related to temperature, but not to humidity or CO_2 content.

G-11452

Cohrs, F.
SICKENING OF DOMESTIC ANIMALS THROUGH SMOKE DAMAGE AND INDUSTRIAL WASTE WATER. [Erkrankungen der Haustiere durch Rauchschaeden und Abwaesser der Industrieanlagen.] Translated from German. Monatsh. Veterinaermed., 11(2):662-669, 1956. 77 refs.

The effects of industrial smokes containing sulfur compounds, arsenic compounds, lead, copper, fluorine, molybdenum, zinc, and selenium on domestic animals are reviewed. The most frequent intoxications result from lead, arsenic, SO_2, and fluorine. Fluorosis has gained considerable importance in the last 30 years and today represents the most important disease among the smoke injuries. Pneumoconiosis very seldom develops in animals as a result of flue ash. Clinical manifestations and pathological anatomy, the course of disease, the changing picture of the disease manifestations, and meteorological and topographic influences are discussed. Mechanical, chemical and physical effects of smoke are also considered.

G-11453

AIR POLLUTION. [La pollution de l'air.] Translated from French. Chambres d' Agriculture, 35(304; Suppl.): 1-16, Nov. 1964.

The effects of air pollution in rural and urban areas are reviewed. The effects of pollutants on plants and animals and the effects of radioactivity and pollution due to chemical products are considered for rural areas. In urban areas the consequences of air contamination on man, plants, and materials are considered. Particular emphasis is devoted to air contamination in Paris, which is principally due to emissions from domestic furnaces (3 million combustion units), industrial fumes, and automobiles (1.2 million). These three sources are discussed in detail, with a tabulation of sources of CO_2, SO_2, and fumes produced, and a discussion on the influence of pollution on materials, urban vegetation and man. A regulation concerning the fight against air pollution and odor in France is presented, including the establishment of "protection zones" and strictures on type, condition and operation of combustion equipment allowed.

G-11456

Ferro, O.
ESTIMATING DAMAGES FROM TOXIC GASEOUS EFFLUXES. [Stima di danni da emanazioni gassose tossiche.] Translated from Italian. Agric. della Venezie, Vol. 14, p. 364-383, 1960.

The estimation of damages caused by toxic effluents is illustrated in the case of seven agricultural claimants against a glass factory emitting fluorine compounds. The decay of topsoil, diminished or lack of production of the plantations, and damage to cattle through the ingestion of polluted fodder are basic criteria used in the evaluation. The nature of damage (including amounts of fluorine found) is discussed in detail. The estimation of indemnities (e.g. value of dead plants) for each of the seven claimants is outlined. Technical devices aimed at eliminating these emissions are briefly discussed.

G-11466

Bohne, H.
INDUSTRIAL SMOKE DAMAGE FROM FLUORIDES. [Industrielle Rauchschäden durch Fluor.] Translated from German. Mitt. Deut. Landwirtsch. (Frankfurt), 77(17):575-578, 1962.

The damage caused to plants and animals by air containing fluoride was investigated, and the extent of this damage and its economic importance evaluated. Damage to plants usually takes the form of discoloration of leaves. Chemical analyses were performed to determine the extent of cumulation of fluorine in cereals, truck crops and fodder plants, pastures, fruit trees, garden and decorative plants, and forest trees. The green portion of pear leaves gathered contained 8.5 percent fluorine, and the brownish edge of the leaves, 21.2 mg percent fluorine, illustrating that the discoloration was due to the effect of fluorine. Fluoride emissions exert quite evident damage on cattle. The animals eat contaminated fodder, grass, and hay, and also inhale quantities of fluorine. This explains why these animals suffer more in comparison to animals kept constantly in stables. The external sympton of such effects is a yellow to dark brown discoloration of the incisors, whose enamel sometimes breaks off. Increased deposition of fluorine in the bones sometimes results in stiff hobbling and painful walking. Chemical analysis proves that animals showing these symptons of fluorine exposure have in their organism too much of this substance. These symptoms were also observed in hogs who were allowed to eat in pastures. Cattle show a reduction in the formation of milk and they conceive poorly as a result of fluoride emissions.

G-11467

Miessner, H.
DAMAGE TO ANIMALS CAUSED BY INDUSTRY AND TECHNOLOGY. [Schädigung der Tierwelt durch Industrie und Technik.] Translated from German. Deut. Tieraerztl. Wochenschr., Vol. 39, p. 340-345, 1931. 26 refs.

Pollution of the air and damage to feed plants, and the resulting diseases of humans and animals, are extremely frequent in regions where ore-processing metallurgical plants are located. The fumes being produced during roasting and melting of the ore are usually bonded to sulfur and arsenic; consequently the smoke contains considerable quantities of SO_2 and As_2O_3. This smoke most affects cattle. Acute arsenic intoxication becomes manifest in the form of vomiting and diarrhea, caustic injuries to the gastric mucosa, and fatty degeneration of the liver. In chronic cases, increasing cachexia, eczema and weakening resembling paralysis are observed. The metallic elements in the fly dust, moreover, can lead to harmful indigestion. During acute lead poisoning, stomach distress is observed, as well as spastic movements. Chronic lead intoxication leads to a malaise combined with abortion, lead colic, muscular pain, epilepsy, and paralysis. The red blood corpuscles show a partial basophilic granulation. Hydrofluoric acid fumes from foundries and plants producing artificial fertilizers dissolve the calcium in the bones, and chronic calcium degradation and softening of the bones are the consequences. As a result of an air pollution episode in Lüttich, damage by foundry smoke in fog caused hundreds of persons to fall ill and 63 to die, mostly within 1 to 2 days. Hardest hit were asthmatic and heart patients, and persons suffering from bronchitis. Copper intoxication was observed in sheep and cattle as a result of spraying orchards with lime and copper.

G-11469

Liegois, F. and J. Derivaux
SOME CASES OF CHRONIC FLUOROSIS IN SHEEP. [Quelques cas de fluorose chronique chez des moutons.] Translated from French. Annales de Médecine Veterinaire, 100(5):221-224, 1956. 63 refs.

Clinical observations of several sheep with chronic fluorosis in Belgium are discussed in detail. The observations are compared with those of several authors. Numerous examinations of the blood, particularly studying the total calcium, inorganic phosphorus, phosphatases and in some cases magnesium, polypeptides, urea, cholesterol, proteins, serum albumins and globulins, and glucose were made. Autopsy of these animals showed no specific characteristics, other than bone lesions and especially dental lesions. The limit safe dose of fluoride that a cow can absorb daily over a long period of time was investigated. No delayed growth or weight gain, or alteration in the general condition and hooves of lactating cows receiving 2 to 3 mg of fluorine in the form of natural phosphates, was observed.

G-11650

Halbwachs, Gottfried and Josef Kisser
DWARFISM IN FIRS AND BIRCHES CAUSED BY SMOKE IMMISSIONS. [Durch Rauchimmissionen bedingter Zwergwuchs bei Fichte und Birke.] Translated from German. Zentralblatt für das gesamte Forstwesen, 84 (2-6):156-173, 1967. 34 refs.

A morphological and anatomical study of dwarfed varieties of Norway spruce and birch was made. The varieties became established under the chronic influence of polluted air containing HF from an aluminum plant. A possible effect of minerals or water in the soil was excluded. The spruce specimen examined was 20, the Birch, 18 years old. The trees have a shrub-like, bushy appearance. This is due to the fact that the terminal shoot of the spruce fades out when it grows beyond a certain height, then occasionally the buds from the lateral twigs start to develop. The shape of the dwarfed birch is caused by elongation of basal buds. The size of the needles and leaves is greatly reduced particularly on the weather side. The reduction is due to a decrease in number as well as size of the cells. The number of pith ray cells per unit area is increased as well as size of the cells. The number of pith ray cells per unit area is increased as compared to normally developed spruce trees. With birch no different reaction was found. It is open for further investigation if this observation indicates a fundamentally different reaction of dwarfed soft- and hardwood.

G-11663

Steinhübel, Gejza
CHANGES IN THE STARCH RESERVES OF HOLLY LEAVES AFTER ARTIFICIAL CONTAMINATION WITH SOLID DUST. [Zmeny v skrobovych rezervach listov cezminy po umelom znecisteni pevnym popraskom.] Translated from Slovak. Biologia, 18(1):23-32, 1963. 26 refs.

Starch determinations were made on sunlit and shaded holly leaves (Ilex aquifolium) and on other species used as controls. The holly was selected for the study because of its usefulness in horticulture and its resistance to air pollution. The starch was evaluated microscopically by means of potassium iodide. Artificial contamination of the leaf surface was effected by application of an egg white - carbon powder mixture. The thickness of the applied mixture corresponded approximately to conditions found near metallurgical plants. The diurnal fluctuations in starch concentration were determined in clean and contaminated samples. The starch concentration in April-May exhibited regular 24-hour cycle variations. In sunshine the variation had two maxima and in the shade only one. Solid contaminants of inert composition, applied to the leaf surface, had a positive effect on starch production in sunshine but a very retarding effect in diffuse daylight. Because holly is a shade loving plant the effect in direct sunlight is due to the absorption of rays by the contaminants.

H-2140

Hayakawa, Kazuya
AIR POLLUTION AND PAINT. Translated from Japanese. Kuki Seijo [Air Cleaning]. 4(1):36-38, 1966.
19 refs.

This is a review, mainly of American and British authors, of the harmful effects on coatings caused by aerosols from incomplete combustion of coal and liquid fuel. The chemical processes involved in the reaction of the coatings with aerosols, microbes, and sulfur dioxide are explained. Various kinds of protection processes are reviewed.

H-3215

Kobayaski, M., T. Mikani, and Y. Senoa
EFFECTS OF AIR POLLUTION AND ITS PREVENTION ON INTERNATIONAL TELECOMMUNICATION SYSTEMS. Translated from Japanese. Clean Air (Tokyo) 3(6):45-51, March 1966.

The effects of inorganic gases, organic gases, and soot on pure paddadium are investigated. Palladium is used at the contacts in crossbar switches and wire spring relays. Pollutants cause poor electrical connection.

H-8612

Bacskai, Gyula
AIR POLLUTION BY THE CHEMICAL INDUSTRY AND ITS EFFECT ON CONSTRUCTION MATERIAL. [Vegyipari atmoszfera szennyezodese es hatasa a szerkezeti anyagok korroziojara.] Translated in Hungarian. Magy. Kem. Lapja (Budapest). 22(10):534-539, 1967. 7 refs.

Concentrations of air pollutants, such as chlorine, phenol, ammonia, SO_2, and NO_2, in different Hungarian chemical plants are given and the effect of these pollutants on corrosion of construction materials, particularly iron and zinc is discussed. Corrosion is increased by the gaseous and solid contaminants of the atmosphere. Deeper insight into atmospheric corrosion mechanisms is required to provide efficient protection.

H-11641

Barton, Karel
THE INFLUENCE OF DUST ON THE ATMOSPHERIC CORROSION OF METALS. [Der Einfluss von Staub auf die atmosphärische Korrosion von Metallen.] Translated from German. Werkstoffe Korrosion, Vol. 8/9, p. 547-549, 1958. 3 refs.

Data on the influence of dust with different characteristics on the process and rate of atmospheric corrosion of metals are reported. The following types of dust were selected for the corrosion test on carbon steel, zinc, copper and aluminum: 1. pulverized silica gel, 2. activated carbon, 3. glass dust, and 4. dust from a chemical factory. No action of dust with high absorbability for water vapor and SO_2 was found. In the presence of SO_2, the action of the dust can be disregarded. A slight aggressive action may be expected in pure atmospheres with dusts containing a certain share of leachable components with Cl^- and SO_4^{--}. Different absorbability for water vapor has no influence on the aggressivity of the dust. With iron, dusts with a small content of leachable components form corrosion centers in pure atmospheres but these propagate only very slowly in the absence of corrosion promoting agents. By analogy, nonferrous metals only oxidize.

J-1257

Biersteker, K., H. de Graaf, and Ch. A. G. Nass
INDOOR AIR POLLUTION IN ROTTERDAM HOMES.
[Luchtverontreiniging in Rotterdam, een vergelijkend onderzoek van luchtverontreiniging binnen en buiten de woningen.] Translated from Dutch. Nederlands Tijdschrift voor Geneeskunde (Rotterdam), 109(I): 793-799, April 24, 1965. 3 refs.

800 paired samples of indoor and outdoor smoke and SO_2 concentrations of 60 Rotterdam homes were studied in an effort to throw more light on the role that indoor air pollution may play in epidemiology. It was found that smoking increased the amount of smoke found in living rooms and the data suggest that newer houses tend to have less SO_2 in the living rooms than older houses. On the average living rooms contained approximately 80 percent of the smoke and 20 percent of the SO_2 measured simultaneously outdoors during 24 hr periods. The probability of having more SO_2 in the living room than outdoors is estimated at less than 2 percent of the days, but the findings of constant high SO_2 in one living room in this small sample may mean that faulty chimneys and heaters may play a bigger role in air pollution mortality during fogs than so far has been suspected. (Authors' abstract)

J-2054

Georgii, Hans-Walter
THE CONCENTRATION OF CARBON MONOXIDE MEASURED AT DIFFERENT ALTITUDES SIMUTANEOUSLY IN CITY STREETS. [Die Vertikalverteilung des Kohlenmonoxid in Grossstadtstrassen in Abhängigkeit von den meteorologischen Bedingungen.] Translated from German. Proceedings, International Clean Air Congress, Part I, London, 4-7 Oct. 1966, p. 209-210.

Results are presented of the investigation of the carbon monoxide concentration measured in city streets at different altitudes above street-level simultaneously. The influence of traffic-density, wind velocity and wind direction on the carbon monoxide concentration in different levels is discussed. The results show a diurnal trend of CO concentration in all levels above the street, the amplitude of which is determined by the rate of emission of automobile-exhaust gases and the wind-distribution. The evaluation of the effect of wind on the CO concentration reveals a great difference whether the measurement of carbon monoxide is carried out on the weather-side or on the lee-side of the street. On the basis of the results of the CO and the wind distribution, an idea of the circulation of air and the ventilation in city streets can be gained. (Author's abstract)

J-2953

PROVISIONAL METHODOLOGY FOR COMPUTING ATMOSPHERIC DISPERSION OF WASTE ASHES AND SULFUROUS GASES FROM POWER STATION SMOKESTACKS. [Vremennaya metodika rashetov rasseivaniya v atmosfere vybrosov (zoly i sernistykh gazov) iz dymovykh trub elektrostantsiy.] Translated from Russian. Teploenergetika, No. 7, p. 89-92, July 1964. C.I.T.E.P.A. Documentary Information Report No. 20, CI 208.

The method proposed is based on theoretical and experimental work carried out in the vicinity of a large thermal power station. It is valid for the calculation of dispersion of pollutants, determination of the necessary height of smokestacks, and for attaining normalized values of ground-level concentration of such pollutants. The report explains how to apply the formula defining maximum concentration and how to select the various factors involved. A graph is proposed which gives, in terms of maximum concentration at a given distance, the value of the concentration of pollutants at other points, and, finally, a method is described for calculating the minimum height of smokestacks compatible with the authorized limits of concentration of waste products in the atmosphere. An example is given of the practical application of this method in calculating the maximum concentration of noxious impurities at ground level.

J-6192

Miura, Toyohiko, Kikuzi Kimura, Kunimori Kimotsuki, Hiroshi Okusa, Osamu Tada, and Tsutomu Sawano
COMPARISON OF THE CONCENTRATION OF SUSPENDED PARTICULATE MATTER AND GASEOUS POLLUTANTS BETWEEN INDOOR AIR AND OUTDOOR AIR IN URBAN AREA. Translated from Japanese. Rodo Kogaku, 41(10):493-500, 1965. 18 refs.

The concentration of suspended particulate matter and gaseous pollutants of indoor and outdoor air in Tokyo was determined at several locations including factories, business machine rooms and offices. The concentration of suspended particulate matters was determined by Roken Type long term recording impactor and gas analysis for SO_2, NO_2 and HCHO of indoor and outdoor air was carried out at the same time. The electromicrographs revealed that most of the particulate matter in the urban area was microfine, seeming to be carbon particles and some mist particles. The concentration of suspended particulate matter of the outdoor air in the urban area ranged from 0.05 to 0.5 mg/m^3 and that of the indoor air in air conditioned rooms ranged from 0.01 to 0.3 mg/m^3. The attenuation efficiency of an air filter with electrostatic precipitator for suspended particulate matter was high. The concentration of SO_2 of the indoor air was lower than that of outdoor air, but the differences were not marked in cases of NO_2 and HCHO. (Authors' abstract, modified)

J-6204

Teubner, J., K. Horn, A. Knauer, and K. Hammje
AIR-HYGIENIC MEASUREMENTS OF THE RELATIONSHIPS BETWEEN SO_2 IMMISSION, NUMBER OF NUCLEI, NUMBER OF GERMS AND METEOROLOGICAL FACTORS. [Lufthygienische Untersuchungen uber Beziehungen zwischen SO_2-Immission, Kernzahl, Keimzahl und meteorologischen Faktoren.] Translated from German. Z. Ges. Hyg. Grenzg. (Berlin), 11(7):497-500, July 1965.

The relations between SO_2-immission, number of nuclei, number of germs, as well as the meteorological factors of air temperature, wind velocity and rainfall were observed at two measuring points (a dwelling area and an industrial area) of a big city for one year's time. The number of nuclei changed in the same direction as the SO_2-immission. This was due to their same sources of origin. The number of nuclei changed counter-directionally towards the temperature. This was due to a secondary influence exerted by the heating processes in winter, as well as by the improved exchange conditions of atmospheric air existing in summer. The SO_2-concentrations were directly dependent on the rainfall conditions; there exist secondary relationships with air temperature. Relations between the number of germs and the SO_2-immission however, existed only at one measuring point and even there only under certain bacteriological experimental conditions. All further comparisons, particularly those concerning the number of germs and the number of nuclei, air temperature, wind velocity and rainfall revealed that the measuring values obtained were completely independent of one another. The number of germs is of no practical importance as an air-hygienic indicator for characterizing the pollution of the atmospheric air. (Authors' summary)

J-6787

STUDIES OF THE AIR POLLUTION IN THE DEPARTMENT OF THE SEINE IN 1965. PART I. CARBON MONOXIDE RESULTS. [Etudes de Pollution Atmospherique dans la Departement de la Seine en 1965. Premiere Partie. Operation Oxyde de Carbons.] Translated from French. Laboratoire Municipal de la Prefecture de Police, Paris, France. April 1966. p. 1-2, 5, 9-11, 13, 15-17, 19, 21, 23-29.

The values for carbon monoxide are given in a report by the Paris Municipal Laboratory which has followed the carbon monoxide values determined in the Paris streets since 1956 as indicative of the air pollution from automobiles. A statistical examination was made of the 15,187 samples taken at 317 sampling stations. Two percent or 312 samples had a carbon monoxide content of 100-200 ppm, 27 or 0.2 percent were from 200-300 ppm, and 11 were above 300 ppm. The average values for carbon monoxide in 1965 was 24.3 ppm compared to 23.9 ppm in 1964, and 31.1 ppm in 1963. There are numerous tables showing the carbon monoxide at various sampling stations and at various underground passages. Studies are also reported of the carbon monoxide in the blood among three groups: persons who feared they had been affected by carbon monoxide, workers who were exposed to carbon monoxide, and drivers involved in an accident who had blood taken to determine alcoholic content. An appreciable number of persons in each group had CO levels in the blood which were a matter of concern. While the slight increase in the 1965 figures is not significant, there is no doubt that the number of cars will continue to increase as will the problem.

J-7231

Jaenicke, R. and C. Junge
STUDIES OF THE UPPER SIZE LIMIT OF THE NATURAL AEROSOL. [Studien zur oberen Grenzgrösse des naturlichen Aerosoles.] Translated from German. Beiträge zur Physik der Atmosphäre, 40(1/2):129-143, 1967.

Assuming a sedimentation and diffusion equilibrium for natural aerosols in the lower atmosphere, theory predicts an upper limit of the particle size of 20 to 30μ. For experimental verification, a special particle detector was designed which is capable of detecting one particle per cubic meter. It consists of a rotating propeller whose blade tips are lined by adhesive strips made of silicon oil. The apparatus and its calibration are described in detail. Measurements in Mainz, the Taunus, the Black Forest (1480 m), on Helgoland, and on the Jungfraujock in Switzerland (3570 m) revealed no upper limit of the particle size up to 150μ. Furthermore, the results were remarkably uniform and showed no dependence on locality (and thus local emission sources), altitude, or elevation. The distribution of the larger particles is a smooth continuation of the distribution of the sizes between 0.1 and 10 μ.

J-7367

Gundermann, Knut-Olaf
DANGER TO THE MOTORIST FROM CARBON MONOXIDE. [Zur Gefährdung des Kraftfahrers durch Kohlenmonoxyd.] Translated from German. Städtehygiene, 77(11):2482-53, 1964.

Results of CO-measurements made in the urban areas of Hamburg and Kiel, West Germany, are reported. After a brief discussion of the constituents of automobile exhausts and of previous CO-measurements, results of CO-measurements performed with the Draeger gas detector model 9/31 are presented in six tables. Of 35 measurements made in each city from a moving passenger car during rush hours, eight values were above 0.01 percent (maximum allowable concentration) in Hamburg and two in Kiel. Since both cities have favorable climatic conditions, it must be concluded that higher concentrations may occur in other communities. Improving the flow of traffic and avoiding smoking while driving are recommended.

J-7486

Narasaki, Masaya
CHANGE OF DUST CONCENTRATION INDOORS. Translated from Japanese. Japan Air Cleaning Assoc. (Tokyo), 3(4):32-35, 1965. 5 refs.

Factors which affect the change of dust concentration indoors are the concentration of outdoor dust, dust generation due to combustion or air flow, and sedimentation. The relation between dust concentration indoors and out is graphed for periods during which the air conditioner was on and off. Tests were performed for dust sedimentation and also when CO_2 and dusts were generated in the same room. It was observed that the smaller the particle size, the smaller the sedimentation ratio, the ratio being the greatest at the moment dust generation stopped. The ratio was also larger in rooms with ventilation than without. The theory for quantitative investigation is given illustrating that the concentration at time t is expressed: $C_r\ (t)=C_s(t)+C_f(t)+C_o(t)$, where C_s accounts for indoor dust generation, C_f for outdoor dust generation, and C_o is the contribution to dust at t=0. The assumption made here is that the quantity of air entering and leaving the room is the same. Measurements of the amount of air ventilated by dust is not easy to determine; sedimentation rate determination is likewise difficult.

J-7526

Gräfe, Kurt and Walter Schütze
INVESTIGATION OF DUST PRECIPITATION IN HAMBURG WITH 230 BERGERHOFF INSTRUMENTS.

[Staubniederschlagsuntersuchungen mit 230 Bergerhoff-geräten.] Translated from German. Städtehygiene, No. 8, 8p., 1966. 5 refs.

Since the fall of 1964, 223 dust sampling locations have been set up in Hamburg, which are equipped with Bergerhoff jars. Six locations have more than one unit. Dust precipitation is measured in mg x m^{-2} x day $^{-1}$. The periods of measurement and some results of the statistical analysis of the precision of the measurements are tabulated. Generally, short periods yielded higher average values and large variations. Air pollution by dust is described by the "characteristic concentration parameter" (I_1, I_2), as defined in the "Technical directives for clean air maintenance". A map of Hamburg is reproduced in which areas of specific maximum I_1 values are indicated. These results are discussed and explained by relating them to dust-emitting sources. A detailed statistical analysis also supports the view that there is a strong relationship between dust precipitation and atmospheric precipitation and that there is good correlation between dust precipitation and wind together with dry ground. These preliminary results already indicate that strong dust sources must be limited and that watering the streets during summer is essential.

J-8628

Hess, W.

AIR POLLUTION CAUSED BY RESIDENTIAL AND INDUSTRIAL HEATING IN THE CITY OF ZURICH. [Die Luftverunreinigung durch häusliche und industrielle Heizungen in der Stadt Zürich.] Translated from German. Neue Zürcher Zeitung, "Technology" Supplement, Nov. 18, 1964, p. 3-10. 9 refs.

The systematic testing of the air in Zurich is discussed. Sulphur dioxide measurements were made from May 1962 to 1964 at 28 measuring points, distributed over the entire Zurich area. Liesegang's method was used in taking the measurements. Over 1,500 samples have been collected. During the months May to September the sulphur content of the city air averaged one to two milligrams per one hundred hours of exposure time. For the industrial area the sulphur content in the summer is considerably higher than in the other areas. From December through March the villa quarter had a peak at 11.5 mg of sulphur. The residential quarter and the densely populated residential area measurements were similar. The mixed residential and industrial area produces a somewhat higher level of sulphur content. The air in Zurich has not reached an intolerable limit of pollution. Seven hundred oil heating installations, distributed over the entire city area, were tested. All solid and all unburned liquid parts of the flue gas were precipitated onto the filter paper and analyzed. The individual measurements were evaluated according to the Bacharach scale. For each installation a check sheet was prepared which made very rapid and simple evaluation possible. A few of the oil burners and heating pots were manufactured prior to 1945. No very great differences in their way of functioning were observed. Those manufactured between 1945 and 1955 plainly had many more defects than the two next categories, from 1955 to 1960 and from 1961 to 1964. In a table, five of the most heavily represented types of pots and burners are shown and compared to the soot figures. Instructions for the installation of and for owners' operation of oil burning heating equipment are discussed.

J-7994

Prokopenko, A. V. and S. Ya. Fedorchuk

AN ASPIRATOR ATTACHMENT FOR 24-HOUR AIR SAMPLING. Translated from Russian. Gigiyena i Sanitariya, No. 7, p. 60-61, July 1965.

An attachment for an aspirator to facilitate unattended sampling for air pollution is described. The aim was to provide intermittent operation; 2nd hour on, 2nd hour off to allow the aspirator to cool completely before repeating the cycle. This attachment allows the aspirator to automatically turn on and off to maintain normal operation. This attachment can also be fitted onto other pneumatic pumps or aspirators of any type. The attachment consists of a starter, three relays, four diodes and a clock. The attachment works on a current rectified by a diode bridge. An alarm clock is used as a time gauge to the hour hand of which a small cam of organic glass with 3x6 millimeter dimensions is attached. This cam, completing one revolution per hour along with the hour hand, breaks small contacts built in under the clock cover. With breaking of these contacts the contacts the condenser becomes charged. As soon as the contacts are completely closed, impulse relay drops, and its normally closed contacts close, while the normally open contacts break. At this time the condenser discharges onto a switch-on relay as a result of which the starter is switched on through the normally open contacts of the starter relay. Thus, the normally closed contact breaks, and the normally open one closes and the aspirator is switched on. With the next revolution of the cam the condenser discharges onto a switch-off relay, the circuit of the starter coil is broken, and the aspirator switches off. Then the described cycle repeats itself in the same sequence.

J-8812

Müller, Th.

AIR POLLUTION FROM AUTOMOTIVE EXHAUSTS. OBSERVATIONS IN BASEL. [Die Verunreinigung der Atmosphäre durch die Abgase der Motorfahrzeuge. Beobachtungen in Basel.] Text in German. Z. Praeventivmed. (Zurich), 11(2):157-160, March-April, 1966. 5 refs.

CO level was sampled in air taken from 3 areas of dense traffic during the period 1961-1964. Levels found ranged from 0 to 45 ppm, with occasional peaks to 90 ppm. These levels were about the same each year, in contrast to the sharp increase in the number of automobiles during that period. No conclusions are drawn from this observation, but the ambient air concentration of other exhaust gas components is pointed out as also significant. Averages are given for ammonia, SO_2, NO_2, and aldehyde. In order to clarify the possibility of eventual harm from lead additives in gasoline, urine samples from all traffic policemen were examined in 1965. There was no evidence of lead accumulation in any of the samples.

J-8991

Okita, Toshiichi
ADSORPTION AND OXIDATION OF SULFUR DIOXIDE AT ORDINARY TEMPERATURE. I. MEASUREMENT OF ATMOSPHERIC ACID PARTICLES AND LABORATORY EXPERIMENTS ON THE ADSORPTION AND OXIDATION OF SULFUR DIOXIDE ON THE SURFACE OF PARTICLES AT ROOM TEMPERATURE. Translated from Japanese. Koshu Eiseiin Kenkyo Hokoku [Bulletin of the Institute of Public Health] (Tokyo), 16 (2):52-58, June 1967. 9 refs.

The presence of airborne acid particles was monitored and the particles sized, using thymol blue-gelatin film. In Tokyo and Osaka air, acid particles were detected frequently with most around a micron in size. In fog, acid droplets as large as 30 μ were detected. No acid particles were detected in Asahikawa. Laboratory experiments on the adsorption and oxidation of SO_2 on the particle surfaces indicate that manganese salts, active carbon, and coal soot can lead to the formation of acid particles. SO_2 appears to react with $CaCO_3$ or iron oxide to form sulfate. Some of the particles suspended in Tokyo air were capable of producing acid particles, whereas airborne particles in Asahikawa had no such activity. (Author's abstract, modified)

J-9007

De Fraja Frangipane, E., C. F. Saccani, and V. Turolla
OUTDOOR AND INDOOR AIR POLLUTION. [Inquinamento atmosferico e inquinamento dell'aria degli ambienti confinati.] Translated from Italian. Nuovi Annali d'Igiene e Microbiologia, 14(6):403-421, Nov.-Dec. 1963. 16 refs.

The results of investigations aimed at analyzing the content of particulate matter and SO_2 in indoor air and comparing them with those of outdoor air are reviewed. The investigations were conducted in Milan and Genoa, Italy, New York City, Cincinnati, and Moscow.

J-9008

Jaccard, G. and P. E. Pilet
STUDY OF THE ATMOSPHERIC POLLUTION IN THE CITY OF LAUSANNE. [Etude de la pollution atmospherique de la ville de Lausanne.] Translated from French. Institut de biologie et de physiologie vegetales de l'Universite de Lausanne, Jan. 16, 1968, 48p.

Measurements were conducted from October 1965 to September 1966 of sulphurous anhydride (SO_2) and carbon monoxide. The analyses were completed by a systematic study of various sensitive biological tests in the presence of polluted air. SO_2 was measured by two methods: gravimetric measurement and measurement by an automatic recording apparatus which measures electrical conductivity. Carbon monoxide was measured with the Uras apparatus, which measures infrared ray absorption. Biological tests were run by making measurements of pine needles and lentil seeds. Dust was measured with membrane filters, using gravimetric analysis. Germs were measured with the same apparatus used for dust, then seeded on solid culture medium. The titer of absorbed SO_2 is much higher in winter than in summer. In summer, the diurnal SO_2 titer is higher than the nocturnal titer. The CO titer varies during the day, the diurnal titer being almost double that of the nocturnal titer. No results are given for winter measurements. Those for summer are diagrammed. It is concluded that foreign gases are present in air currents from aeration openings and act on the growth and metabolism of the nearby pine needles and lentil plants. The dust titer was found to be relatively low in the city. The increase in total germ titer was in direct ratio with the occupation of work locations and of streets. A mobile laboratory is described.

J-9010

Brühlmann, R.
CARBON MONOXIDE DETERMINATIONS IN SUBTERRANEAN CARPORTS. [Kohlenmonoxidmessungen in unterirdischen Autoeinstellhallen.] Translated from German. Chemische Rundschau, 17(26):1-8, 1964. 5 refs.

CO determinations with a recording infrared spectrograph are reported. The measurements pertain to ventilated garages and garages without ventilation systems in the City of Zurich. The CO concentrations in ventilated garages are on the average (for a 10-hr measurement period) below 60 cm^3 CO/m^3. Individual short-term peak values of more than 500 ppm could be occasionally observed. The values determined in an unventilated garage were also observed occasionally. The values determined in an unventilated garage with approximately 70 to 90 parking spaces ranged from 90 to 100 ppm and the peak values reached a height of more than 500 ppm CO. (Author's summary)

J-9018

Hess, W.
SUMMARY OF THE ATMOSPHERIC STUDIES IN THE CITY OF ZURICH BETWEEN 1961 and 1965. [Übersicht über die Luftuntersuchungen in der Stadt Zürich von 1961 bis 1965.] Translated from German. Zeitschrift für Präventivmedizin, 11(2):144-156, 1966. 5 refs.

Measurements of CO, SO_2, and NO_x concentrations were made at several important intersections of heavy traffic. Carboxyhemoglobin concentrations were measured in the blood of traffic officers and were correlated with CO measurements. The concentrations of the various pollutants fluctuated within a wide range and varied with the density of traffic and meteorological conditions.

J-9726

Langmann, R. and H. Kettner
THE PROBLEM OF CHRONIC CO INTOXICATION AND INVESTIGATION OF CO POLLUTION IN LARGE CITIES. [Die Problematik einer chronischen Intoxikation durch Kohlenoxyd und Untersuchungen seiner Immissionen in Grossstadten.] Translated from German. Offentl. Gesundheitswesen (Stuttgart), 30(1):7-11, Jan. 1968.

In contrast to the common agreement on the danger of high CO concentrations, opinion is divided on the risks of human exposure to low concentrations of this gas. The literature on this subject is briefly reviewed. Some 114 different samples were measured at 30 points of heavy traffic flow in Mülheim (Ruhr) during the morning and evening rush hours; an infrared absorption device measured CO levels. About 90 percent of the samples exhibited 25 ppm CO or less, with the mean value at 14.5 ppm. These figures can be compared to the continuously high level of 200 ppm found in large parking garages. Meteorological conditions had a significant effect, hazy weather almost doubling the mean CO levels. Levels of lead and hydrocarbons paralleled those of CO at the locations sampled. The significance of CO measurements and pollution abatement measures are briefly discussed.

J-10550

Georgii, H.-W., E. Busch and E. Weber
IMMISSION CONCENTRATION OF CARBON MONOXIDE IN FRANKFURT/MAIN AND ITS DISTRIBUTION IN TIME AND SPACE. [Untersuchung über die zeitliche und räumliche Verteilung der Immissions-Konzentration des Kohlenmonoxid in Frankfurt am Main.] Translated from German. Ber. Inst. Meteorol. Geophys. Univ. Frankfurt/Main (Frankfurt), No. 11, p. 66, May 1967. 21 refs.

This report presents new results of a study of the distribution of street CO levels. Simultaneous measurements of the CO level and of wind distribution in different levels above the street were performed. The apparatuses used are described. Evaluation of the data was carried out with respect to traffic density, wind velocity, and wind direction. The results show a diurnal trend in all levels, the amplitude of which is determined by the rate of production of automotive exhausts and by the wind distribution. There is an empirical difference, which is described graphically, between measurements of CO on the weather or on the lee side of the street. Based on these results, a model of air circulation in the streets and of street ventilation can be deduced.

J-10782

PHYSICAL PRINCIPLES FOR DEVELOPING A METHOD OF COMPUTING ATMOSPHERIC DISPERSION OF POLLUTANTS FROM POWER STATION SMOKESTACKS. [Fiziceskie principy postroenija motoki rasceta rasseivanija v atmosfere vybrosov iz dymovyh trub elektrostancij.] Translated from Russian. Teploenergetika (Moscow), 21(7):92-94, July 1964.

A Russian study is translated which examines the various physical principles involved in establishing a tentative method for calculating the dispersion of pollutants in the atmosphere. Starting with the known turbulence theory and applying modern methods for solving differential equations with the aid of electronic computers, the study considers: the vertical component of the turbulence exchange coefficient and how it varies with height; the conditions of temperature stratification in the atmosphere; and the sedimentation rate of the impurities--both gaseous and solid. The various parameters of pollutant discharge are examined: height of smokestack, initial velocity of combustion gases, diameter of the smokestack opening, volume of gas discharged as a function of time, etc. Based on the above, a method is then developed whereby it is possible to compute—for a wind velocity considered dangerous and under average meteorological conditions—the maximum concentration of light impurities, heavy impurities, and impurities discharged by several smokestacks of the same height. Corrections are proposed for the special cases of temperature inversion or irregular terrain. The distance at which the maximum calculated concentration is obtained is found proportional to the height of the smokestack. The theoretical calculations agree with actual measurements.

J-10809

Trompeo, G., G. Turletti, and O. Trombi Giarrusso
CARBON MONOXIDE CONCENTRATION IN UNDERGROUND GARAGES AND PARKING FACILITIES. [Concentrazioni di CO nelle autorimesse interrate.] Translated from Italian. Rass. Med. Ind. (Rome), 33,(3-4): 392-393, May-Aug. 1964.

The results of CO determinations of air samples from 12 underground garages and parking facilities are reported. The average concentration was found to be very near the MAC (according to American standards), with readings of 10-300 ppm. In view of the long hours worked by garage employees (more than 8 hrs), these high levels of CO could bring about symptoms of chronic CO poisoning.

J-10823

Bricard, Jean, F. Billard, Guy Madelaine, and Jaques Pradel
THE EVALUATION OF THE COLLECTION OF FILTERS FOR RADIOACTIVE AEROSOLS OF KNOWN SIZE. [Ermittlung der Abscheideleistung von Filtern mit radioaktiven Aerosolen bekannter Grösse.] Translated from German. Staub (Düsseldorf), 24(9):345-348, Sept. 1964. 9 refs.

Labeling of an aerosol with radioactive thoron is discussed. Mathematical calculations lead to the conclusion that electrical equilibrium is attained in all cases for a monodisperse aerosol. Experimentally, three aerosols were separated. Using this theoretically and experimentally defined aerosol, the deposition capacity of a high efficiency filter was measured. Permeability increases with diameter of the particles, in the range of $5 \times 10^{-3}\ \mu$ to $2 \times 10^{-9}\ \mu$. It appears that permeability has a certain maximum for particles with diameters of 0.1-0.3 μ.

J-10826

Juda, Jan and Karol Budzinski
ERRORS OF DETERMINATION OF THE MEAN DUST CONCENTRATION AS A FUNCTION OF THE NUMBER OF SINGLE MEASUREMENTS. [Fehler bei der Bestimmung der mittleren Staubkonzentration als Funktion der Anzahl der Einzelmessungen.] Translated from German. Staub (Düsseldorf), 24(8):283-287, Aug. 1964.

Previously, it had been assumed that the coefficient K of the change of concentration remains constant during a specific technological process and under specific production conditions. This assumption led to the assumption that the standard deviation remains constant for a logarithmically-normal distribution; these assumptions would significantly simplify calculations and diminish the error of the mean value determination as a function of single measurements. This hypothesis dealing with the logarithmically-normal distribution was to be applied to both gaseous and atmospheric pollutions. By checking with a serial determination of the SO_2 levels in the air, the hypothesis could only be proved to about 13 percent, and thus cannot be accepted.

J-10830

Matla, W. P. and J. Terpstra
CORRELATION BETWEEN THE QUARTZ AND ASH CONTENTS OF COAL-MINE DUST. [Beziehung zwischen Quarz und Aschegehalt von Strebestaub.] Translated from German. Staub (Düsseldorf), 24(8):312-314, Aug. 1964. 3 refs.

The ash and quartz contents of dusts collected during seven coal mining operations for four hours were determined. There is a distinct correlation between the quartz and ash contents in the dust, such that the ash content of the dust is considered to be a sufficiently accurate indicator for establishing quartz content.

J-10837

Vassy, Arlette
OZONE IN ATMOSPHERIC LAYERS NEAR THE GROUND. [L'ozone dans les couches voisines du sol.] Translated from French. Geofis. Meteorol. (Genoa), 9(1-2):1-4, April 1961. 10 refs.

Many local factors can affect measurements of ground-level ozone concentrations and distort their geophysical or meteorological significance. Some of these are: winds, site of the sample intake (which should be quite high), ozone destruction by large or small concentrations of dwellings, and automobile exhaust gases. Nitrogen pexoxide is the reason for the destruction and formation of harmful ozone by automobile exhaust pollution. A comparison is made between the effects of exhaust gases in Los Angeles and in Paris.

J-10845

Lebbe, M. J.
RECENT RESULTS OBTAINED IN THE STUDY OF ATMOSPHERIC POLLUTION FROM EXHAUST FROM AUTOMOTIVE VEHICLES IN THE AIR OF PARIS. [Résultats récents obtenus dans l'étude de la pollution atmosphérique par les gas d'échappement des véhicules automobiles, de l'atmosphére de Paris.] Translated from French. Pollut. Atmos. (Paris), 27(5):316-325, July-Sept. 1965.

Air pollution measurements at various locations throughout the city of Paris, conducted by the Municipal Laboratory, have made it possible to determine the amount of carbon monoxide and hence, by statistical correlation, of lead, traceable to automobile traffic. The data are tabulated and discussed. The origin of the benzo-3, 4-pyrene found at various locations could not be ascribed to automobile traffic. Pollution is affected by the manner of vehicle flow, and the layout of the major thoroughfares studies, in addition to the number of vehicles moving.

J-10863

Stratmann, H.
INVESTIGATIONS ON THE SULFUR DIOXIDE CONTENT OF LAYERS OF AIR NEAR THE GROUND IN THE VICINITY OF COAL-BURNING POWER PLANTS. [Untersuchungen über den Schwefeldioxydgehalt bodennaher Luftschichten in der Umgebung von Steinkohlen-Kraftwerken.] Translated from German. Mitt. Ver. Grosskesselbesitzer (Duesseldorf), No. 37, p. 705-714, 1955. 34 refs.

An investigation of the sulfur dioxide content of layers of air near the ground in the vicinity of coal-burning power plants is presented. Also discussed are the procedures used to discover the concentration ranges and relative distribution of SO_2 through explanation of formulas applied in the Ruhr district of Germany to compare a plant in an urban area with one in a rural area. Average concentration of SO_2 at 0.2 mg SO_2/m^3 air was hypothesized and proven empirically.

J-10897

Gräfe, Kurt
IMPORTANCE OF DUST AND SO_2 MEASUREMENT DATA IN DETERMINING MINIMUM HEIGHTS OF STACKS. [Bedeutung von Staub- und SO_2-Messergebnissen für die Bestimmung von Schornsteinmindesthöhen.] Translated from German. Ber. Deut. Wetterdienstes (Frankfurt), 11(91):117-119, 1962. 5 refs.

Dust and SO_2 measurement results, which were obtained in downtown Hamburg continual registrations, are discussed briefly with the help of tables and illustrations and wind direction compasses. Such measurement results are required in order to consider factors that are important in determining the minimum heights of chimneys according to the method of Wippermann and Klug. The effect of this initial loading (initial stress) on the height of the chimney, which is necessary for reasons of air hygiene, is presented here with the help of two examples. In conclusion, possibilities are mentioned which might permit the use of lower chimney heights without neglecting clean-air requirements.

J-11441

Ishido, Shozaburo, Tamie Tanaka, and Tatsuko Nakagawa
AIR CONDITIONS IN DWELLINGS WITH SPECIAL REFERENCE TO NUMBERS OF DUST PARTICLES AND BACTERIA. Translated from Japanese. In: Free Dust Particles and Air-Borne Microflora, p. 127-135. 6 refs.

Dust particles and bacteria under actual living conditions in three kinds of dwellings in Osaka City and suburbs were measured. The dwellings were a two-story concrete apartment, a wooden two-story tenement, and a suburban two-story dwelling of one-hour concentration. Measurements were conducted in relation to cleaning, bedding placement and removal, and sleeping conditions. Ground plans are illustrated and the relative numbers of bacteria and dust particles under various conditions (type of room, time of day, before and after cleaning) are shown graphically. The results indicate that indoor dust particle concentrations are for the most part controlled by outdoor air conditions. On the other hand the number of bacteria is controlled by indoor living conditions.

J-11442

Seisaburo, Sekido, Kameda Kiyoko, and Tatsuko Nakagawa
FREE DUST PARTICLES AND AIRBORNE MICROFLORA. Translated from Japanese. Osaka Shiritsu Daigaku Kasei-gakubu Kiyo (Bulletin of the Department of Home Economics, Osaka City University), 4(3):31-37, 1959. 7 refs.

Concentrations of dust and bacteria in concrete apartments and Japanese wooden houses during the summer are reported. The results are compared with previous measurements made during the winter. The relationship of these measurements by time of day as well as daily activities and outdoor concentrations are reported. The outside dust density in the center of cities shows regular variations. This density is quite high, particularly during winter, and occurs indoors almost to the same extent. There are sometimes decreased densities because of doors or curtains or time lags, but the direct effects of outside air on the atmosphere indoors are clearly present. The generation of dust through daily activities is of comparatively short duration and is not directly reflected in the daily variations in density. On the other hand, the number of airborne bacteria does not show the same regular fluctuations as dust density. It is low from late night to early morning, and high during waking hours. It is thought that the fluctuations in the outside air are not directly reflected in an increase in the bacteria count indoors.

J-11465

Romagnoli, G.
STUDIES ON THE CLIMATIC CONDITIONS IN SOME ELEMENTARY CLASSROOMS OF NOVARA. [Indagine sulle condizioni climatiche nelle aule di alcune scuole elementari di Novara.] Translated from Italian. Rivista Italiana d'Igiene, Vol. 21, p. 410-419, 1961.

The climatic conditions of classrooms in six schools situated in different locations in Novara, Italy were investigated. The classrooms and methods of observation are described. The following parameters were measured, both indoors and outdoors: dust, microorganisms, temperature, humidity, air velocity, and air cooling capacity. Average numerical values of total bacterial load and of staphylococcus are tabulated. It appears from the results that the only decidely negative element in the classrooms investigated was the high bacteria load found during lesson hours. Dust content of the classrooms was invariably lower than that of outside air - with no significant differences between inhabited and empty classrooms. The average dust particle diameter, however, was 0.5 μ in the empty rooms, as against a considerable disparity in form and dimension of dust particles collected during class with an average of about 1.2 μ.

J-11653

Ishido, Shosaburo
AIR POLLUTION IN OSAKA CITY AND INSIDE BUILDINGS. Translated from Japanese. Source unknown, 6p. 3 refs.

Measurements were made of the outdoor and indoor dust concentrations in the air and its diurnal and seasonal variations in the city of Osaka. The shifting patterns of outdoor dust and dirt density during a 24-hour day, with varying wind velocity, and at various heights of a building, are shown graphically and discussed. SO_2 concentrations were measured also. The Roken type instrument for counting dust particles was found to be very laborious for high dust concentrations. Recent developments indicate a preference for dust measurements by weight rather than by particle count. The usefulness and advantages of different analytical instruments are discussed. The role of electrical dust collectors is evaluated for eliminating indoor air pollution. These devices, unlike air filters, capture particles less than one micron in size, but they are expensive. It is emphasized that a reduction of outdoor pollution reduces the level of indoor pollution.

J-11654

Ishido, Shosaburo
VARIATIONS IN INDOOR AND OUTDOOR DUST DENSITIES. Translated from Japanese. Osaka Shiritsu Daigaku Kaseigakubu Kiyo [Bulletin of the Department of Home Economics, Osaka City University], 6(Special Issue):53-59, March 31, 1959. 5 refs.

Measurements of the dust concentration with "Eiken" dust meters inside rooms of a residence, a hospital, and a school in Japan were made with simultaneous outdoor concentration measurements. The results plotted as seasonal and daily dust concentration changes showed that peaks occurred at 10 a.m. and minima at 1-2 p.m. This is attributed to smoke and dust generated by heating. The dust density reached a maximum of 2346 particles per cc in December and a minimum of 752 particles per cc in June. The dust concentration inside the building is directly proportional to that on the outside; this fact holds true not only within relatively small rooms, but also within hospitals and schools. During the late morning a sudden and precipitous reduction of dust density from the forenoon peak is noted. The dramatic wintertime increase in dust density is completely consistent with measured data on soot precipitation, presumably due to heating.

J-11661

Rennerfelt, Erik
SOME INVESTIGATIONS OF THE FUNGUS DIASPORE CONTENT OF THE AIR. [Nagra undersokningar over luftens halt av svampsorer.] Translated from Swedish. Svensk Botanisk Tidskrift, 41(2):283-294, 1947. 14 refs.

The fungus diaspore content of the air at Experimental Field in the neighborhood of Stockholm, Sweden was investigated. The spores were collected in Petri dishes which exposed for 60 to 120 minutes in the winter and 15 to 30 minutes in the spring, summer and autumn.

Altogether 1572 fungus colonies grew on the dishes, 51.5 percent of which were blueing fungi, 19.9 percent molds, and 28.6 percent yeasts. The largest numbers were found in July, August and September. The most common fungus was Cladosporium herbarum. Penicillium species dominated among the molds. The yeast, both tame and wild, amounted to about 30 percent. The most common were Torulopsis and Rhodotorula spp. The fungus spore content of the air in a sawmill timber yard and at a log pile in the forest were also reported. The spore content of the air in one room of the Forest Research Institute was considerably lower than that outdoors.

J-11662

Rostrup, Ove
SOME INVESTIGATIONS OF THE FUNGUS-SPORE CONTENT IN THE AIR. [Nogle Undrsogelser over Liftens Indhold af Svampekin.] Translated from Danish. Botanisk Tidskrift, Vol. 29, p. 32-41, 1908.

The fungus-spore content of the air (indoors and outdoors) in Denmark was investigated. The procedure used involved exposing Petri dishes containing a thin layer of beer wort, gelatin or apple extract or sweatspoons with gelatin in the places to be studied for 15 minutes. The organisms found can most naturally be divided into three groups: bacteria, yeast-like-germinating fungi, and fungi with mycelia. Mold fungi occured far more frequently than bacteria and yeast-like-germinating fungi. Considerably fewer species were found inside than outside; 8.7 and 58.3, respectively, on the average per analysis, corresponding to about 13,000 inside and 87,000 germs outside per square foot per day. Brief comments are made concerning some of the species found. The results are compared with the result of a previous investigation.

K-1567

Berge, Helmut
EMISSION CONTROL, A SUPRA-NATIONAL CONCERN IN OUR TECHNICAL AGE. [Immissionsschutz, eine ueberstaatliche Gemeinschaftsaufgabe in unserem technischen Zeitalter.] Translated from German. MTG (Mensch-Technik-Gesellschaft) Zeitschrift für Sozialökonomie, 1966, 8p. 10 refs.

Local SO_2 warnings; guide lines; and limit values are critically discussed with emphasis on the situation in North Rhine-Westphalia. The need for independent evaluations and supra-national regulations are stressed for the west European community. The economic and sociological as well as the biological aspects of the problem are discussed. The need for continuous measurements is emphasized.

K-2282

LAW CONCERNING PREVENTIVE MEASURES TO MAINTAIN PURITY OF THE AIR OF 17 MAY 1965. [Gesetz über Vorsorgemassnahmen zur Luftreinhaltung vom 17. Mai 1965.] Translated from German. Bundesgesetzblatt, Part I, No. 21, p. 413-415, May 22, 1965.

This legislation concerns the establishment of air pollution stations for certain districts for the measurement of particles and gases. Directives concerning measurement procedures and instruments, particularly concerning the use of continuously recording instruments, will be issued. Enforcement regulations are described and penalties for violators are discussed.

K-2294

LAW NO. 61-842 OF 2 AUGUST 1961: ON THE STRUGGLE AGAINST ATMOSPHERIC POLLUTANTS AND ODORS, AMENDING THE LAW OF 19 DECEMBER 1917. [Loi no. 61-842 du 2 août 1961, relative à la lutte contre les pollutions atmosphériques et les odeurs et portant modification de la loi du 19 decembre 1917.] Translated from French. Journal Officiel, Aug. 3, 1961, p. 7195.

Newly enacted legislation on air pollution and odors from industrial, non-industrial, agricultural and other combustion sources, as well as from radioactive substances and transportation, are the content of this bill. A fine may be inflicted in the event of failure to carry out the work or modifications within the period prescribed. Under Title II, the legislation dating from 1917 and 1932 is being amended.

K-2301

LEGISLATION CONCERNING THE STRUGGLE AGAINST ATMOSPHERIC POLLUTION. [Loi relative à la lutte contre la pollution atmosphérique.] Translated from French. Moniteur Belge, p. 345, Jan. 14, 1965.

This legislation pertains to emissions from gaseous, liquid, or solid substances which may cause harm to human health, animals and plants, or prove damaging to property. The legislation also enforces control over devices or installations apt to create pollution, and reserves the right to enforce use of such devices or installations which prevent or control air pollution.

K-2295

PUBLIC HEALTH AND SANITATION: ATMOSPHERIC ODORS AND POLLUTION. DECREE NO. 63-963 OF 17 SEPTEMBER 1963. [Santé et salubrité publiques: Odeurs et pollutions atmosphériques. Décret no. 63-963 du 17 septembre 1963.] Translated from French. Journal Officiel, p. 8539, Sept. 1963.

The legislation concerns control of the emission of odors and air pollutants from all combustion sources. Noncompliance offenders are to be penalized. Special attention is given to smokeless zones. Established emission standards will be strictly enforced.

K-6124

Wiethaup, H.
SMOG ALARM AND LEGISLATION. [Der Smogalarm in rechtlicher Sicht.] Translated from German. Zentr. Aerosol-Forsch. (Stuttgart), 13(5-6):501-508, May 1967.

In the state of North Rhine Westphalia, Germany, there are presently in effect four legislative acts concerning air pollution. For incidents of severe smog conditions they provide for: compulsory change-over to fuels low in sulfur for industrial enterprises emitting more than 200 kg of sulfur dioxide per hour; banning motor traffic from certain areas; laws and regulations to administer and enforce the anti-air pollution acts. The paper questions the necessity for these rather stringent laws since smog conditions in the area concerned are extremely rare; so far, smog has never been persistent or particularly obnoxious and is not known to have caused damage to human health, animal, or plant life. Caution and vigilance, however, are being exercised and cooperation of the industrial and private community is helpful.

K-9009

Sweden, Ministry of Communication. Expert Group for Development in the Field of Auto Exhaust
REPORT OF ACTIVITIES DURING THE PERIOD OF 1 JULY 1966 TO 30 JUNE 1967. [Redogörelse för verksamheten under tiden 1 juli 1966 - 30 juni 1967.] Translated from Swedish. p. 1-12.

The activities of the Communications Ministry expert group in Sweden are summarized. Some of the purposes of the development work are to make more effective measures possible for reducing harmful substances in auto exhaust gases and to supply the technical foundation for formulating the regulations necessary for this. The investigations and studies include the following: (1) Investigation of driving methods; (2) Measurement of CO in open air; (3) Testing of Swedish antipollution devices for autos; (4) Measurement of exhaust gas emission during cold and warm starting; (5) Study of crankcase ventilation; (6) Study of diesel exhaust gases; (7) Testing of equipment for a mobile laboratory; and (8) Development of a method for analysis of organic lead compounds. Proposed activities for the coming year are also outlined.

K-9128

Ochab, E. and J. Horodecki
LAW OF 21 APRIL 1966 ON PROTECTION AGAINST AIR POLLUTION. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Dziennik Ustaw (Moscow), No. 14, p. 113-115, April 29, 1966.

Air pollution in Poland within the meaning of the law occurs when the air absorbs stable, liquid or gaseous substances in quantities or of a type which can exceed the permissible concentration in the air. The law's nineteen articles which are aimed at maintaining the concentration of pollutants below the maximum allowable concentration are outlined. Enforcement procedures and the duties of establishments emitting pollutants and organizations of the governments handling matters of air pollution are emphasized.

K-9129

Cyrankiewicz, J.
DEGREE OF THE COUNCIL OF MINISTERS OF 23 MARCH 1967 CONCERNING PROTECTIVE ZONES AGAINST AIR POLLUTION. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Dziennik Ustaw (Moscow), No. 15, p. 95-96, May 6, 1967.

Regulations concerning protective zones for individual establishments which discharge air pollutants in Poland are outlined. The organizations responsible for determining the width of the zone and the use of its terrain are designated.

K-9130

Cyrankiewicz, J.
DECREE OF THE COUNCIL OF MINISTERS OF 26 SEPTEMBER 1967 CONCERNING PRINCIPLES USED TO DETERMINE THE AMOUNT OF FINES IMPOSED ON ESTABLISHMENTS FOR EXCEEDING THE AMOUNT OF DUST WHICH CAN BE DISCHARGED IN THE AIR. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Dziennik Ustaw (Moscow), No. 40, p. 323-324, Oct. 21, 1967.

A regulation outlining the computation of fines against establishments exceeding the permissible amount of dust emitted into the atmosphere in Poland is presented.

K-9131

Grochulski, J. and J. Sztachelski
DECREE OF THE CHAIRMAN OF THE CENTRAL WATER UTILIZATION BUREAU AND OF THE MINISTER OF HEALTH AND SOCIAL WELFARES OF 31 JANUARY 1967 CONCERNING PRINCIPLES APPLIED IN MEASUREMENTS OF CONCENTRATION OF AIR POLLUTION. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Monitor Polski (Warsaw), No. 11, p. 94-96, Feb. 24, 1967.

According to a regulation in Poland, establishments emitting pollutants into the atmosphere must measure the amount of discharged substance and maintain records of the results. The measurements must be made at least once after three periods of 24 hour continued operation. The following measurements must be made: (1) concentration of pollutant, (2) temperature, (3) pressure, and (4) velocity of discharge. The regulation also contains a directive concerning the method of measuring and computing the amount of discharge. The duties of governmental organizations dealing with air pollution measurement are also outlined.

K-9132

Grochulski, J.
DECREE OF THE CHAIRMAN OF THE CENTRAL WATER UTILIZATION BUREAU OF 16 JULY 1966 CONCERNING THE SPREADING OF AIR POLLUTION. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Monitor Polski (Warsaw) No. 36, p. 365, July 20, 1966.

A regulation in Poland requires the measurement of pollutants from existing sources of emission. In all areas which are distinct topographically and meteorologically, the extent of the spreading of air pollution must be determined. It requires the measurement of meteorological parameters [wind turbulence, wind direction, vertical temperature gradient, and vertical gradient of wind speed] and the degree of pollution [concentration of pollutants, distribution of pollutants, and changes of pollutant concentration].

K-9133

Grochulski, J.
DECREE OF THE CHAIRMAN OF THE CENTRAL WATER UTILIZATION BUREAU OF 15 JULY 1966 CONCERNING THE DETERMINATION OF ORGANS WHICH ARE COMPETENT TO COORDINATE PLANTS OF ECONOMIC UTILIZATION OF SPACE, LOCATION AND PRELIMINARY PROJECTS OF CONSTRUCTION OR RECONSTRUCTION OF ESTABLISHMENTS FROM THE VIEWPOINT OF PROTECTION AGAINST AIR POLLUTION. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Monitor Polski (Warsaw), No. 37, p. 380, July 28, 1966.

Regional and local plans of economic utilization of space, general location of establishments, and preliminary projects of construction or reconstruction are to be coordinated by the Central Water Utilization Bureau and the organization of the appropriate people's council respectively, according to a Polish regulation.

K-9134

Grochulski, J.
DECREE OF THE CHAIRMAN OF THE CENTRAL WATER UTILIZATION BUREAU OF 15 SEPTEMBER 1966 ON THE SUBJECT OF REPORTING DATA PERTAINING TO THE CHARACTERISTICS OF ESTABLISHMENTS FROM THE VIEWPOINT OF PROTECTION AGAINST AIR POLLUTION AND ON THE SUBJECT OF PRINCIPLES USED IN DETERMINING THE TYPE AND AMOUNT OF SUBSTANCES WHICH THE ESTABLISHMENTS MAY BE ALLOWED TO DISCHARGE. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Dziennik Ustaw (Moscow), No. 55, p. 534, Oct. 11, 1966.

A Polish regulation requires establishments emitting pollutants to submit reports containing the following information: (1) description of source, (2) operational time, (3) average amount of waste, their temperature and rate of discharge, (4) type of pollutant, (5) characteristics of control equipment, and (6) height and diameter of individual outlets of pollutants. The organization handling matters of air protection determines the amount of pollutants an establishment can discharge.

K-9135

Grochulski, J. and J. Sztachelski
DECREE OF THE CHAIRMAN OF CENTRAL WATER UTILIZATION BUREAU AND OF THE MINISTER OF HEALTH AND SOCIAL WELFARE OF 17 OCTOBER 1966 CONCERNING THE SCOPE AND METHOD OF COOPERATION OF THE ORGANS HANDLING MATTERS CONCERNING PROTECTION AGAINST AIR POLLUTION WITH ORGANS OF THE STATE HEALTH INSPECTORATE. Translated from Polish. In: Laws and Decrees on Air Pollution in Poland. Monitor Polski (Warsaw), No. 59, p. 582, Oct. 26, 1966.

A regulation in Poland stipulates that organizations handling matters of air protection and the state health inspectorate should exchange opinions regarding plans of economic utilization of space and preliminary projects of construction or reconstruction. They also should inform each other on the following subjects: (1) annual plans of measuring pollutants, control measurements, and plans for the control of establishments, (2) programs and results of studies and scientific research, and (3) results of inspections and measurements.

K-9136

Grochulski, J.
DECREE ON PROTECTION AGAINST AIR POLLUTION. Translated from Polish. Monitor Polski (Warsaw), No. 32, p. 341-345, June 15, 1967.

The width of protection zones surrounding industrial emission sources in Poland was established. Manufacturing establishments which emit substances causing air pollution are classified - depending on the type of their production - in one of five categories for which the width of the protective zone is as follows: Class I - 1000 m, Class II - 500 m, Class III - 300 m, Class IV - 100 m, and Class V - 50 m. The width of the protective zone is measured in terms of a straight line from the source of pollution. The classifications of 280 types of establishments which emit substances and pollute the air are listed according to each category.

K-9229

Richter, J.
TRAFFIC IMPROVEMENT AND AIR POLLUTION. [Verkehrssanierung und Lufthygiene.] Translated from German. Z. Praeventivmed. (Zurich), 11(2):220-225, March-April 1966.

Since automotive emissions are lowest at speeds of about 60 km/hr, an increase in speed which increases the traffic capacity of city streets can reduce air pollution. More traffic does not necessarily produce more pollution. Therefore, all measures for increasing the capacity of city streets to expedite the existing traffic are also advantageous from the viewpoint of air pollution. Traffic control measures such as construction of underpasses and bypassing of through traffic are discussed. It is pointed out that Los Angeles is the only city with air pollution caused primarily by automotive exhausts. After removing industrial emission sources from Pittsburg, the city had no smog problem in spite of the increase in automobile traffic.

K-9245

Reichow, H. B.
CITY PLANNING MEASURES FOR NOISE ABATEMENT AND PRESERVATION OF CLEAN AIR. [Städtebauliche Massnahmen in Dienste der Lärmbekämpfung und der Reinhaltung der Luft.] Translated from German. Z. Praeventivmed. (Zurich), 11(6):642-659, Nov.-Dec. 1966.

Modern city planning should have as its objective the abatement of noise and air pollution. The modern street system should have no intersections, only curves for direction changes; noise protection walls should surround thoroughfares, through traffic in residential areas should be eliminated. Specific examples in German city planning are given to illustrate the theory. Much of the article deals with street design aimed at noise abatement.

K-10796

HEIGHTS OF DOMESTIC CHIMNEYS--REGULATIONS IN FORCE IN GERMANY, THE UNITED STATES, FRANCE, GREAT BRITAIN AND SWITZERLAND: STUDIES SYNTHESIZED FROM EXISTING DOCUMENTS. [Heuteur des cheminées domestiques--Spécifications en vigueur en Allemagne, Etats-Unis, France, Grande-Bretagne, Suisse: Etudes de synthèse des documents existants.] Translated from French. I.F.C.E. (Institut Francais des Combustibles et de l'Energie) Information Document No. 18, 12p., May 12, 1964. 17 refs.

Specifications concerning the height of chimneys in Germany, America, and Great Britain are reported, as taken directly from the pertinent, new air pollution control laws. Specifications for administrative building codes in Germany, America, Great Britain, and Switzerland are also reported, with emphasis on chimney design.

K-10797

THE FIGHT AGAINST AIR POLLUTION AND ODORS: CIRCULAR LETTER DATED 14 JANUARY 1964, AND ADDRESSED TO DEPARTMENTAL PREFECTS, CONCERNING THE APPLICATION OF THE DECREE OF 17 SEPTEMBER 1963. [La lutte contre les pollutions atmospheriques et les odeurs: Circulaire du 15 Janvier 1964 a Mm. les Prefets concernant l'application du decret 17 Septembre 1963.] Translated from French. C.I.T.E.P.A. (Centre Interprofessionnel Technique d'Etudes de la Pollution Atmospherique) Information Document No. 18, 4p., April 22, 1964.

This directive interprets the provisions in Decree No. 63-963, of September 1963, and relates them with the 1917 statute, with amendments, and with the Law of August 1961, which covers all establishments deemed dangerous, unhealthy, or inconvenient. The 1917 Law gives the Prefects the power to institute criminal proceedings against offenders. The difference between the 1917 Law and the Decree of 1963 appears to be the difference between a rigid classification of air pollution sources, and the prescription of a grade series of regulations to be applied, where applicable, throughout the country. Title I, containing minimal regulations to be applied throughout the country, is to be used in the effort to require complete combustion in heating apparatuses. Other Articles in the new Decree are interpreted. A course by the National School of Public Health is announced whereby departmental or communal health inspectors can acquire a working knowledge of heating techniques and checking and control methods.

K-10798

Grajetzky, Helmut
MONITORING OF SO_2 POLLUTION IN THE INGOLSTADT REFINING CENTER. [Uberwachung der Luftverunreinigung durch Schwefeldioxid im Raffineriezentrum Ingolstadt.] Translated from German. STAUB (Düsseldorf), 24(10): 390-395, Oct. 1964. 8 refs.

About 1960, a petroleum refining center was established at Ingolstadt. Based on meteorological studies of the area, it was shown that Ingolstadt was not an ideal area to locate such a refinery center: Ingolstadt has more frequent periods of low wind velocity than other German communities. Thus, SO_2 levels can rise to dangerous levels. Monitoring stations and a mobile monitoring unit are described. Meteorological readings obtained are graphed. These daily average SO_2 readings are used to activate the official five-stage "SO_2 Alarm Plan", whereby the refineries can be required to reduce production, and thus reduce emission of SO_2, or even to stop work. For example, a daily median value for all monitoring stations of 0.5-0.6 mg/m^3, or half-hour SO_2 excess above 7.5 mg/m^3, (Alarm Level II) could require a 20 percent reduction in plant emission. With this plan in effect, the plants are not required to use low-sulfur fuel all the time.

K-10802

Wiethaup, Hans
GREAT BRITAIN: THE LEGAL BASIS OF AIR POLLUTION CONTROL. [England: Rechtsgrundlagen der Bekampfung von Luftverunreinigungen.] Translated from German. Wasser Luft Betrieb (Mainz), 8(4):219-221, April 1964. 12 refs.

After a historical review of air pollution and its control in England, the Alkali Works Regulation Act of 1906 and the Clean Air Act of 1956 are described. In the Act of 1906, 25 types of plants which emit noxious gases were defined and registration and annual inspections of such plants were required. Penalties could be incurred for emission or non-cooperation. The Act of 1956 deals with smoke abatement for smokes derived from combustion only, leaving the Alkali Act of 1906 and Public Law 1936 still in effect. Emission of dark smoke is prohibited and fines can be incurred for operation of heating installations with the emission of dark smoke, or for emission of smoke in control areas or smokeless zones. Private organizations such as the National Society for Clean Air, have also been active since 1899. According to civil law, action for damages can be requested in case of personal damage or damage to property.

K-10803

Wiethaup, Hans
ITALY: THE LEGAL ASPECTS OF AIR POLLUTION CONTROL. [Italien: Probleme der Luftverunreinigung in rechtlicher Sicht.] Translated from German. Wasser Luft Betrieb (Mainz), 9(2):118-119, Feb. 1965. 15 refs.

Due to its favorable climate and geography, Italy has had no urgent air pollution problems in the past. Only as recently as 15-20 years ago, with the advent of industrial centers and the increase in automobiles, has Italy paid any attention to air pollution. There is as yet no special law regulating the problem. Relevant provisions of the Civil Code, the Penal Code, the Public Health Law, and the Town Planning Law are discussed. Unfortunately the Road Traffic Act of 1949 does not contain any provisions for vehicular exhausts, although the regulation of excessive traffic noise is included. Instead, local authorities have enacted public health ordinances to protect the health of the population, for example, Milan in 1952, Genoa in 1955, Turin in 1962, and Bologna in 1957. These local laws deal mainly with air pollution caused by heating installations.

K-10804

Wiethaup, Hans
IRELAND: THE LEGAL ASPECTS OF AIR POLLUTION. [Irland: Probleme der Luftverunreinigung in rechtlicher Sicht.] Translated from German. Wasser Luft Betrieb (Mainz), 9(5):322-327, May 1965. 17 refs.

Ireland's island location and climate do not favor air pollution. There are thus very few laws which are concerned with air pollution. The Civil Law provides the usual legal safeguards. The English Penal Law (which is still valid) and the Criminal Justice Act together provide for action following damage to persons, plants, animals, and objects, but in the absence of any special penal regulations, claims of injury or damage from air pollution are not admissible. Instead, the English Alkali Act of 1906 is in force, specifying 21 types of industries whose emissions should be controlled. The Local Government Act of 1962 and the Road Traffic Act of 1961 provide for the establishment of air pollution regulations, and for the monitoring of air pollution, as well as prohibit the excessive emission of fumes or visible exhausts from vehicles. Town Planning Legislation does not contain any special regulations on the prevention of air pollution.

K-10848

Wiethaup, H.
THE LEGAL BASIS OF CLEAN-AIR MAINTENANCE IN THE NETHERLANDS. [Rechtsgrundlagen der Luftreinhaltung in den Niederlanden.] Translated from German.

Krankenhausarzt (Karlsruhe), 38(12):415-417, 1965. 17 refs.

The Netherlands have had laws for some time which deal with the prevention or control of air pollution, but no comprehensive "clean air" law. Relevant portions of the Civil Law, the Penal Law, the Nuisance Law of 1952, and the several regulations and ordinances are discussed. There are no mandatory regulations limiting air pollution. Generally, the Nuisance Law meets the needs of the communities. Six private organizations for combatting air pollution are listed.

K-10850

Japan. Ministry of Health and Welfare
COLLECTION OF STATUTES AND CABINET ORDERS RELATING TO AIR POLLUTION CONTROL. Translated from Japanese. Preprint, 57p., 1962.

The Air Pollution Control Act of June 2, 1962 is presented. This act was enacted for the purpose of controlling the disposition of soot and smoke created by plants and workshops so as to prevent danger to public health due to pollution, to insure the maintenance of healthy living conditions and the steady development of industry, and for the purpose of establishing systems for the conciliation of disputes concerning air pollution. Penalities are also listed. The cabinet order fixing the enforcement date for the Air Pollution Control Act (Order No. 435 on 30 November 1962) is also provided, as well as the cabinet order on the enforcement of the Air Pollution Control Act (Order No. 438 on 1 December 1962). Ministerial Rules on the enforcement of the Air Pollution Control Act are listed, including format of the notifications to be used. Other statues related to air pollution are parts of the Mineral Mines Safety Act of 1949, the Act on Temporary Measures to Control Electrical Industry of 1952, the Gas Industry Act of 1954, the Local Taxation Law of 1950, and the Act for providing Incentive Funds for Medium and Small Size Enterprises of 1961.

K-10865

Germany. Public Health Service
JOINT MINISTERIAL BULLETIN. Translated from German. Regulation Z 3191 A on Air Pollution Control. Department of the Interior (Bonn), Sept. 14, 1964. 34p.

General administrative instructions concerning permit-requiring addenda per Section 16 of the Industry Control Act of West Germany (Technical Instructions on Air Pollution Control) of September 8, 1964, are provided. Topics covered are: nomenclature and units of measurement; general principles for approvals and supplementary regulations; limiting emission; the established maximum values for immissions (limiting immission values); determining the ground level concentration of sulfur dioxide in an area; calculating minimum stack heights; and regulations per Section 25, Par. 2, of the Industry Control Act.

K-11421

Eilers, H.
AIR POLLUTION. IV. ALERT AND ALARM REGULATIONS IN SOME FOREIGN CITIES. [Waakzaamheidsen alarmstelsels in enkele buitenlandse steden.] Translated from Dutch. Ingenieur, 80(10):G33-G38, March 8, 1968. 17 refs.

Air pollution alert and alarm regulations in Ingolstadt, and the Ruhr area, Germany, New York City, and Los Angeles County are discussed in detail, tabulated and compared. The differences in predominant types of pollution - e.g. photooxidation in Los Angeles, SO_2, soot, etc. in New York, and SO_2 in the Ruhr area - are noted, with a detailed explanation of the complexities of Los Angeles smog and of the various alarm stages used. The possibility and desirability of introducing an alarm system in the Netherlands is discussed. With increased motorization, the chance for damage to horticultural districts is increasing, and an alarm system, resulting in the limitation of traffic under unfavorable conditions, may be required.

K-11659

Poland. Ministry of Mining and Power Engineering
COOPERATION IN THE FIELD OF DESULFURIZATION OF COMBUSTION GASES. Translated from Polish. Letter and 7 attachments to American Embassy, Warsaw, Dec. 13, 1967.

Six topics of planned research projects to be conducted in Poland in cooperation with the United States in the field of desulfurization of combustion gases are outlined. For each topic, scope of investigation, participating institutions, anticipated results, technical-economic substantiation of the scope of research, state of research, description of research methodology and plans, and proposals to the United States are listed. The concepts outlined include "SO_2 sorption with metal oxides", combining stack gases with gaseous ammonia", and "the use of dolomite to protect boiler heating surfaces", among others.

L-7079

Germany. Society of German Engineers. Clean Air Maintenance Commission.
MAXIMUM IMMISSION CONCENTRATIONS OF ORGANIC COMPOUNDS. [Maximale Immissions-Konzentrationen: Organische Verbindungen.] Translated from German. VDI Richtlinien 2306, 5p., March 1966.

The VDI Guide Lines for Maintenance of Purity of the Air fall into the following groups: 1. Maximum Immission Concentrations (MIK). 2. Dissemination of non-atmospheric substances in the atmosphere; 3. Restriction of the discharge of such substances; 4. Analyses and methods of measurement. For the purpose of maintenance of air purity, MIK values are needed for numerous organic compounds. They can be used as reference values for the dimensioning of relevant installations and for evaluation of measurement data in the immediate vicinity of sources of contamination. If the MIK value for a substance is unknown it is recommended that if there are no known reasons to the contrary about 1/20 of the maximum allowable concentration value be taken as a start. Technical societies recommending personnel to serve on the VDI Commission on Maintenance of Purity of the Air are listed. Neither the MIK or MAK values are listed.

L-9006

Switzerland. Commission for Air Hygiene
DIRECTIVE FOR SETTING LIMITS ON THE EMISSION OF SULFUR DIOXIDE. [Richtlinien zur Beurteilung von Schwefeldioxyd-Immissionen.] Translated from German. Bulletin of the Swiss Department of Health, Section B, No. 2, 8p., April 3, 1965.

Tolerable limits are set for sulfur dioxide as an air pollutant under normal conditions. The limits were chosen such that as long as they are observed, even sensitive individuals and species will not suffer any impairment of their health. The recommended limits are meant to serve as a basis for the planning and constructing of equipment which will emit sulfur dioxide. These limits are also meant for evaluating existing conditions, and for judging damage. These directives are the guiding principles of the Swiss Commission for Air Hygiene for owners and users of installations which emit sulfur dioxide and for supervisory and regulatory public agencies. A brief summary is given of the effects of sulfur dioxide on man, animals, and plants. The recommended limits of sulfur dioxide content of the atmosphere are given as limits for day averages and limits for half-hour averages.

L-9137

Cyrankiewicz, J.
PERMISSIBLE CONCENTRATION OF AIR POLLUTION. Translated from Polish. Dziennik Ustaw (Warsaw), No. 42, p. 403-404, Oct. 8, 1966.

Maximum allowable concentrations of SO_2, H_2SO_4, NO_x, H_2S, CO, gasoline, dust, and CS_2 in "special protection areas" and "protected areas" in Poland are outlined. Special protection areas include areas of health resorts and health protection areas, national parks, and reservations of natural resources. Protected areas include other terrains of the land, with the exception of land occupied by manufacturing establishments or other sources of pollution and protective zone areas. Exceptions for a specified period can be granted in the following cases: (1) Difficulties involved in the installation of air purification facilities in the manufacturing establishments due to exceptionally high investment costs, lack of opportunities to find a producer of such equipment or appropriate technical methods; (2) Excessive agglomeration of manufacturing establishments in a given area, which causes air pollution in excess of the permissible concentration in spite of the utilization of appropriate purification facilities; (3) When a new manufacturing establishment will exceed the maximum permissible concentration of air pollution in spite of the fact that the most adequate control equipment has been installed.

L-10829

Matla, W. P. M. and J. Terpstra
THE GRAVIMETRICALLY DETERMINED DUST LIMIT VALUES OF THE "STOFFINSTITUT" AND AMERICAN DUST LIMITS. [Die gravimetrisch ermittelten Staubgrenzwerte des "Stoffinstituut" und amerikanische Staubgrenzen.] Translated from German. STAUB (Düsseldorf), 24(8):309-311, Aug. 1964. 12 refs.

Dust limits for Dutch coal mines are based upon plotting of the gravimetric dust limits for the type of dust. Dutch and American dust limits are related mathematically and the results of 133 dust measurements are used to plot the American dust limit values for dusts with quartz level of 10 and 15 percent of the ash content. These two levels approximate the Dutch maximum permissible levels.

L-10847

Friberg, Lars and Ragnar Rylander
SWEDISH MEDICAL AIR QUALITY GUIDES. [Medicinska rekommendationer rörande luftrenhetsnormer.] Translated from Swedish. Nord. Hyg. Tidsk. (Copenhagen), Vol. 46, p. 1-32, 1965. 46 refs.

The air pollution situation in Sweden, including the medical effects of specific pollutants, is discussed and compared with published data from other countries. After a discussion of threshold values and exposure levels, medical factors such as the carcinogenic, mutagenic, toxic, and annoyance effects of specific pollutants on the body are examined - with a special section on respiratory effects. In an effort to set air quality guidelines despite the dearth of data from Swedish studies, the following maximal permissible values were recommended: Sulfur dioxide - 25 pphm (2 hour sample); 5 pphm (30 day sample). Carbon monoxide - to be kept as low as possible and under no circumstances higher than 30 ppm (8 hour sample) and 120 ppm (1 hour sample). Soot - an increase should be avoided (no recommendations made for nuisance effects). No quantitative guidelines are presented for metals, carcinogenic and mutagenic substances, and pollutants causing sanitary nuisances. Further data collection is urged.

L-10858

Zhilin, V. G.
MAXIMAL SIZE OF CONDENSATION ELECTRIC POWER PLANTS IN THE CASE OF AIR POLLUTION. Translated from Russian. Original Source Unknown, 24p., [1964?].

The problem of limiting air pollution caused by electric power producing stations is discussed. Specific suggestions include setting limits on the capacity of the plants to produce electricity, which would in turn limit the production of ash and sulfurous compounds; also mentioned are reasonable conventions placed on the physical dimensions of the exhaust stacks. Formulas and detailed tables are given for evaluating and judging the pollution dispersion properties of various types of exhaust stacks in relation to a range of the most commonly used fuels.

L-11414

Biersteker, K.
FRESH AIR QUALITY STANDARDS. [Kwaliteitsnormen Buitenlucht.] Translated from Dutch. T. Soc. Geneesk., No. 46, p. 166-176, 1968. 58 refs.

Fresh air quality standards in different nations are reviewed. Considerable differences exist because the hazards of air pollution are assessed differently. However, the differences in clean air specifications appear to disappear as the maximum permissible impurity concentrations become gradually lower. The Committee for Soil, Water and Air in Rotterdam developed standards which have no legal significance but help government and industry to establish clean air policies. These standards are tabulated for chlorine, hydrogen fluoride, carbon monoxide, ozone, nitrogen dioxide, sulfur dioxide, hydrogen sulfide and sulfuric acid with comparable standards shown for West Germany, Russia, and the United States. The permissible SO_2 concentration in California is higher than in Europe. This is due to the fact that SO_2 plays a minor role in summer fog formation. In Europe, however, fog occurs in the winter and is accompanied by high SO_2 and smoke concentrations. Another notable difference in air quality standards is that the Russians have unrealistically high standards for clean air while in Western Europe air is considered as a raw material which should be left in a reasonably good condition for the next consumer. Air quality directives, being used for the city of Rotterdam, and air pollution alarm systems used for Los Angeles and proposed for New York, are discussed.

L-11418

Brasser, L. J.
AIR POLLUTION. I. AIR QUALITY GUIDES, SURVEY TECHNIQUES, AND METHODOLOGICAL ASPECTS. [Toelaatbaarheid van luchtverontreiniging, benaderd vanuit meettechnisch standpunt.] Translated from Dutch. Ingenieur, 79(49):A722-A729, Dec. 8, 1967. 6 refs.

When establishing guidelines for the permissibility of certain quantities of air pollutants, survey experiences, information concerning the relationship between the concentration of the pollutant, the duration of exposure, and the effects must be considered. The height of peak concentrations and the duration of sampling are interrelated: measurements of a shorter duration give higher peak concentrations than measurements with a longer sampling duration. This means that the sampling time should be included in the standard. When a large number of measurements are made at the same location, the frequency of occurrence of the concentrations will show a log-normal distribution. On probability paper, this distribution is represented by a straight line. This means that when a maximum allowable concentration is set, this concentration will in practice be exceeded sooner or later. In a standard, not only a maximum allowable concentration should be given, but also the number of times per year that it may be exceeded. The best way to set a standard is to give a frequency line on probability paper, or a combination of frequency lines. The frequency distribution of the concentration of an air pollutant should, in practice, be below this line, to conform with the standard. Since the experiences on which a standard is based are closely connected to the method of measurement, the method should be part of the standard. The total emission of SO_2 in the Netherlands is expected to remain about constant, though there will be a shift from SO_2 production by domestic heating (low chimneys) to that by industrial sources (high chimneys). Since SO_2 will continue to be a major air pollutant, the need for an air quality guide for sulfur is not eliminated by the coming of sulfur-free natural gas.

L-11419

Joosting, P. E.
AIR POLLUTION. II. AIR POLLUTION PERMISSIBILITY STANDARDS APPROACHED FROM THE HYGIENIC VIEWPOINT. [Toelaatbaarheid van luchtverontreiniging, benaderd vanuit hygienisch standpunt.] Translated from Dutch. Ingenieur, 79(50):A739-A747, Dec. 15, 1967. 20 refs.

The concept of tolerance levels is discussed from a medical viewpoint. Standards for air quality are a consequence of a multidisciplinary approach. The choice of tolerance levels is based on qualitative, quantitative, and tolerative criteria. The environmental hygienist should provide medical guides that apply to realistic exposures of population groups, that is, the phenomenology of atmospheric pollution, which can be characterized by cumulative frequency distributions over a year. Available data from various epidemiological investigations have been evaluated in terms of dose-effect relationships for SO_2 and smoke. The results could be transformed in response curves on probability paper for varying combinations of concentrations and exposure times. These graphs are directly comparable with cumulative frequency distributions of pollutants. Application of medical criteria of acceptability to the effect-exposure diagrams results in a bordering of concentrations of SO_2 and days of exposure per year that can be tolerated from the medical point of view in prevailing areas of the Netherlands, where the ratio of SO_2 to standard smoke is about four to one.

M-3160

Kimura, Kikuzu, Osamu Tada, Kuninori Kumotsuki, and Kenji Nakaaki
ON THE GENERATION OF SULFURIC ACID MIST FROM SULFUR DIOXIDE IN THE ATMOSPHERIC AIR. Translated from Japanese. Journal of Science of Labour, 41 (10):501-511, Oct. 1965. 19 refs.

Experimental studies are reported on the simulated oxidation of sulfur dioxide in atmospheric air. It was observed that the higher the air current velocity, and the higher the relative humidity, the more marked the decrease of SO_2 concentration. Sulfuric acid studies showed that it is produced by oxidation of SO_2 in the air and that the coexistence of NO_2, O_3 or H_2O_2 enhances the production of H_2SO_4. Microscope studies of the sulfuric acid mist formed by SO_2 oxidation revealed that the presence of particulate matter contributes to the formation of the acid mist. Electron microscope studies substantiated results by showing that samples of city air contained particles similar to sulfuric acid mist particles obtained experimentally.

M-5378

Kimura, K., K. Kimotsuki, O. Tada, and K. Nakaaki
ON THE ATMOSPHERIC OXIDATION OF SULFUR DIOXIDE. Translated from Japanese. Rodo Kagaku, 41 (10):501-511, 1965. 19 refs.

Basic studies were conducted on the behavior of SO_2, which is most representative of gaseous atmospheric pollutants, and the effect of atmospheric conditions were followed. The first study was to follow the time changes in the decrease in SO_2 concentration within a sealed container especially with respect to the rate of air flow, humidity, or presence of particulate matter. It was found that high air circulating rate of high humidity increased the rate of decrease in SO_2 concentration. This rate also was greater when particulate matter was present than when there was none. This means that the oxidation of SO_2 is favored by high circulating rate, high humidity, or the presence of particulate matter. Qualitative and quantitative tests were conducted on the formation of sulfuric acid by the atmospheric oxidation of SO_2 or by the reaction of SO_2 with other gases present in the atmosphere. A known concentration of SO_2 was generated into a 27 m^3 chamber, and the H_2SO_4 mist generated was analysed. This was followed by studies of the reactions between SO_2 and other gases in 20 l and 5 l reaction bottles under fixed conditions, and the products of these gaseous reactions were analyzed. The results verified the production of H_2SO_4 from SO_2. It was found that there was much greater production of H_2SO_4 from SO_2 when other gases such as NO_2, ozone, or H_2O_2 were present rather than SO_2 alone. The H_2SO_4 mist produced from SO_2 was observed under a microscope, and it was verified that liquid droplets (H_2SO_4) were being formed in the atmosphere. It was found that the presence of particulate matter greatly accelerated H_2SO_4 production. It was found that the atmosphere of an urban area also contains particles similar to the mist formed in the experiments. This was verified by electron microscopy. (Author's summary)

M-5628

Briner, E., W. Pfeiffer and G. Malet
A CONTRIBUTION TO THE STUDY OF PEROXIDATION OF NITROGEN OXIDE. III. THE INCREASE IN THE SPEED OF NITROGEN OXIDE PEROXIDATION AT VERY LOW TEMPERATURES. [Contribution a l'etude de la peroxydation de l'oxyde d'azote. III. L'accroissement de la vitesse de peroxydation de l'oxyde d'azote aux tres basses temperatures.] Translated from French. J. Chim. Phys., Vol. 21, p. 25-44, 1924.

The process of peroxidation of nitrogen oxide, whose speed increases as the reaction temperature drops, is a purely chemical process in flat contradiction with the general rule that the speed of a reaction increases with the rise in temperature. A systematic study of this phenomenon, measuring the reaction speed at increasingly low temperatures was conducted. By means of suitable apparatus and operating methods, the process of peroxidation over a temperature range from +75° to -193°, was observed. For various temperatures within that range, the absolute constants of speed as well as the temperature coefficients were determined. To show clearly the influence of temperature as it occurs in practice on nitrous gases, whose composition is generally given in percentages of NO by volume, the values for the relative constants and the half-reaction times for various temperatures above and below 0° were calculated. The half-reaction times are particularly interesting to consider, since because of the formation of N_2O_3 they indicate good conditions for recovering nitrous mixtures. To bring out the effect of refrigeration at -183° and for a mixture containing 1 percent NO in air, a mixture about the same as the gas from an arc furnace, the half-reaction time is 58 times shorter than at ordinary temperatures. Intense refrigeration of the nitrous gases will thus make it possible to reduce the volume of oxidation chambers by very large proportions.

M-10786

Boriani, V. A. and M. Gandolfi
HISTOCHEMICAL ASSAYS OF DEOXYRIBONUCLEIC ACID IN BRONCHIAL EPITHELIUM IN CHRONIC BRONCHITIS AND BRONCHOPULMONARY NEOPLASMS. [Osservazioni istochimiche quantitative sull'acido desossiribonucleico dell'epitelio bronchiale nelle bronchiti croniche e delle neoplasie broncopolmonari.] Translated from Italian. Arch. Ital. Otol. Rinol. Laringol. (Milan), 72(5-6):628-640, Sept.-Dec. 1961. 33 refs.

A study of the amount of nuclear DNA in bronchial epithelium is described for formal subjects, persons with chronic aspecific inflammation, and for persons with bronchopulmonary neoplasms. The literature is reviewed; the question of a histopathological classification of inflammatory and tumoral lesions is discussed. The histochemical data show that in chronic inflammatory conditions of the bronchi there is more nuclear DNA in the basement and intermediary layers of the bronchial epithelium than in these same layers in healthy subjects. The DNA levels for bronchopulmonary carcinoma do not differ from those for other tumors of the same kind located in other portions of the air passages (nose, larynx). Jackson's adenoma shows an average nuclear DNA level which is much lower than that found in epitheliomas.

M-10788

Harries, C. and K. Langheld
THE BEHAVIOR OF PRODUCTS OF PROTEIN CLEAVAGE AND OF SEVERAL SUGARS TOWARD OZONE. [Über das Verhalten der Eiweissspaltprodukte und einiger Zuckerarten gegen Ozon.] Translated from German. Z. Physiol. Chem. (Berlin), Vol. 51, p. 372-383, 1907. 10 refs.

The chemical effects of ozonization on the fatty products of protein cleavage (glycocol, alamine, leucine, serine, asparagine, guanidine) are experimentally explored. No oxidation products for these substances could be detected. Ozonization of aromatic cleavage products (phenylalanine, tyrosine, and tryptophas) is also explored. Derivatives were found after ozonization of these last three compounds. Chemical properties of the derivatives and cleavage of the benzene ring to yield these products are discussed. Chemical properties of compounds derived from the oxonization of sugars (dextrose, mannitol, and dulcitol) are described.

M-10861

Warburg, Otto
HEAVY METALS AS ACTIVE GROUPS IN FERMENTATION. [Schwermetalle als Wirkungsgruppen von Fermenten.] Translated from German. Berlin, Verlag Dr. Werner Sanger, 1946, p. 60-120. 27 refs.

The action of carbon monoxide of displacing the oxygen carried by hemoglobin in the blood is described as only one among many facets of the physiology of respiratory pigments. The toxic effect of CO on the cell, apart from its combination with hemoglobin, is mentioned. The photochemical dissociation of CO-iron compounds and the effect of light on the CO-inhibition of respiration are discussed in detail among accounts of various manometric studies of fermentation and respiration. The paper contains equations derived from data on photochemical dissociation. The photochemical yield, being the ratio of molecules split to quanta absorbed, was measured for CO-hemochromogens, CO-ferrocysteine, and iron pentacarbonyl. Experiments with myoglobin, chlorophyll and urease are briefly discussed.

M-10866

Reutov, O. A. and U. Yan-Tsei
ISOTOPIC EXCHANGE OF SOME MERCURY ORGANIC SALTS WITH METALLIC MERCURY MARKED WITH Hg^{203}. Translated from Russian. Dokl. Akad. Nauk SSSR (Moscow), 117(6):1003-1006, 1957.

The interaction was studied between metallic mercury labeled with the isotope Hg^{203} and the following organic mercury compounds: x-bromo-mercury-cyclohexanon, the ethyl ester of δ-bromo-mercury-phenylacetic acid, the methyl ester of δ-bromo-mercury-phenyl acetic acid, 3-bromo-mercury-3-benzyl camphor, 3-bromo-mercury-camphor, 1-chloro-mercury-camphene, 2-bromo-mercury-camphagne and n-butyl-mercury bromide. The reactions were carried out under identical conditions. The isotope exchange reaction was found to take place by direct action of metallic mercury on the mercury compound without the formation of free radicals. Isotope exchange occurs under mild conditions without decomposition of the mercury compounds and formation of radicals. Isotope exchange occurred also without change in the stereochemical configuration.

M-10899

Lantzsch, Kurt
ACTINOMYCES OLIGOCARBOPHILUS (BACILLUS OLIGOCARBOPHILUS BEIJ.), ITS CHANGE OF FORM AND ITS PHYSIOLOGY. [Actinomyces oligocarbophilus (Bacillus oligocarbonphilus Beij.), sein Formwechsel und seine Physiologie.] Translated from German. Zentr. Bakteriol. (Parasitenk.) Abt. 11 and Tech. (Jena), Vol. 57, p. 309-319, 1922. 5 refs.

The bacteria oligocarbophilus Beij was studied and found to belong to the group of actinomycetes. Actinomycetes oligocarbophilus occurs in two well defined forms which developed in response to the different carbon sources. The thread shaped, branched form of the microbe assimilates CO while the short bacillus-form assimilates higher members of the aliphatic hydrocarbon series. Benzene and xylene are not assimilated. Hydrogen is also not assimilated. Both forms are acid resistant and gram positive.

M-10900

Kaserer, Hermann
THE OXIDATION OF HYDROGEN BY MICROORGANISMS. [Die Oxydation des Wasserstoffes durch Mikroorganismen.] Translated from German. Zentr. Bakteriol. Parasitenk. Abt. 11 (Jena), Vol. 16, p. 681-696, 1906.

Two bacteria species, i.e. Bacillus pantitrophus and Bacillus oligocarbophilus were discovered which can oxidize hydrogen into water. Three different oxidation mechanisms are formulated which involve reactions of carbon dioxide, carbon monoxide, formaldehyde, and formic acid. The morphology and physiology of the two species was studied. Also the rate of oxidation was determined.

M-10901

Trautz, Max
REACTION KINETICS AND THE ADDITIVITY OF INTERNAL ATOMIC HEAT IN IDEAL GASES. [Reaktionskinetik und Additivität der inneren Atomwärmen bei idealen Gasen.] Translated from German. Z. Electrochemi. (Weinheim), Vol. 22, p. 104-107, 1916.

Based on the collision theory second-and higher-order reaction mechanisms are discussed and temperature dependencies of rate and equilibrium constants for $NOCl_2$ were formulated. The additivity of internal atomic heats was also examined. In the discussion W. Nernst refutes the author's theory and proves non-additivity of atomic specific heat using the example of hydrogen, oxygen, and water vapor.

M-10903

Schumacher, H. J. and G. Sprenger
ON THE EXISTENCE OF HIGHER NITRIC OXIDES. [Über die Existenz höherer Stickoxyde.] Translated from German. Z. angew. Chem. (Weinheim), Vol. 42, p. 697-700, 1929.

The formation of NO_3 as an intermediate product in the reaction between nitrogen pentoxide and ozone was studied by kinetic experiments. The experimental reaction rate data were in agreement with data calculated on the basis of a reaction mechanism involving reactions for the formation and disintegration of NO_3. It is concluded that NO_3 requires the presence of ozone and nitrogen pentoxide and therefore it cannot be present as an intermediate product in the oxidation of nitric oxide with oxygen.

M-10904

Schumacher, Hans Joachim and Gerhard Sprenger
THE REACTION BETWEEN NITROGEN PENTOXIDE AND OZONE. [Über die Reaktion zwischen Stickstoffpentoxyd und Ozon.] Translated from German. Z. Physik. Chem. (Leipzig/Berlin), Vol. 53, p. 77-92, 1928.

The reaction between nitrogen pentoxide and ozone was studied by kinetic experiments. An expression for the reaction rate was obtained. The reaction was also studied spectrographically. Formulation of reaction mechanisms and spectrographic data indicate the presence of NO_3 as an intermediate in the reaction.

M-10905

Schumacher, H. J. and G. Sprenger
DECOMPOSITION OF NITROGEN PENTOXIDE. II. [Der Zerfall von Stickstoffpentoxyd.] Translated from German. Physik. Chem. Abt. A (Leipzig/Berlin), 140 (3-4):281-290, 1929.

In a laboratory investigation of the chemical properties of nitrogen pentoxide, a series of experiments showed that the decomposition of N_2O_5 was not inhibited by ozone, contrary to the opinions of Daniels, Wulf, and Karrer. Details of apparatus and methods and comprehensive charts of the results of each in the series of experiments are given.

M-10906

Schumacher, H. J. and G. Sprenger
THE REACTION BETWEEN NITROGEN PENTOXIDE AND OZONE. II. [Die Reaktion zwischen Stickstoffpentoxyd und Ozon. II.] Translated from German. Z. Physik. Chem. Abt. B (Leipzig/Berlin), 2(4):267-281, 1929.

The reaction between nitrogen pentoxide and ozone was studied in an apparatus which permitted simultaneous photometric and manometric measurements. The concentrations of each component were varied over a wide range. A reaction mechanism was formulated which indicates that NO_3 is formed as an intermediate product.

M-10907

Lunge, G. and E. Berl
NITROGEN OXIDES AND THE LEAD CHAMBER PROCESS. II. BEHAVIOR OF A MIXTURE OF GASES, PRESUMABLY $NO + NO_2$, IN CONCENTRATED SULFURIC ACID AND SODIUM HYDROXIDE 1/5 N. [Untersuchungen über Stickstoffoxyde and über den Bleikamerprozess. II. Verhalten einer Gasgemisches von der ungefaehren Zusammensetzung $NO + NO_2$ gegen konz. Schwefelsaeure and 1/5-n. Natronlauge.] Translated from German. Z. Angew. Chem. (Weinheim), 19(19): 857-869, May 1906.

The behavior of a gas mixture containing NO and NO_2 in sulfuric acid and sodium hydroxide was investigated with the result that for analytical purposes sulfuric acid is the only absorption liquid for the gas mixture. Also the behavior of nitrogen oxide in the presence of oxygen and water was studied together with the kinetics of nitrogen oxide oxidation with oxygen or air. The kinetic curves indicated that the reaction $2NO + O_2 = N_2O_4$ takes place at a constant rate which indicates that the oxidation takes place directly without formation of N_2O_3 as an intermediate.

M-10908

Hautefeuille, P. and J. Chappuis
THE SEARCH FOR GASEOUS COMPOUNDS AND THE STUDY OF SOME OF THEIR PROPERTIES WITH THE HELP OF THE SPECTROSCOPE. [De la recherche des composes gazeux et de l'etude de quelques-unes de leurs proprietes a l'aide du spectroscope.] Translated from French. Compt. Rend. (Paris), Vol. 90, p. 80-82, 1881.

It has been discovered that the gases which issue from the electric discharge apparatus of Berthelot can be studied with a spectroscope. Traces of ozone can be detected when a sufficiently long gaseous column is used. The method has been used to study the destruction of ozone by heat and to study the products obtained by the electrification of a mixture of nitrogen and oxygen. It was found that the bands of absorption of pure and dry ozone, prepared with oxygen from which all of the nitrogen has been removed, disappear slowly at ordinary temperature and rapidly at red-hot temperatures. By avoiding the use of high electric voltages, the discharge apparatuses can be used to prepare ozone in the presence of nitrogen without the formation of hyponitric acid. The experiments can be easily interpreted if the idea of the formation of a pernitric acid, obtained under conditions similar to those which were used by Berthelot to discover persulfuric acid, is accepted.

M-10909

Hautefeuille, P. and J. Chappuis
ON THE COMPOSITION AND THE VOLUME EQUIVALENT OF PERNITRIC ACID. [Sur la composition et l'equivalent en volume de l'acide pernitrique.] Translated from French. Comp. Rend. (Paris), Vol. 94, p. 1306-1310, 1882.

The article describes experiments for determining the composition of nitrogen oxides obtained by electric discharge in air and absorbed in sulfuric acid. Ozone contents are calculated on the assumption that the volume equivalent of pernitric acid is strictly double the volume of nitrogen contained in that acid.

M-10910

Hautefeuille, P. and J. Chappuis
PERNITRIC ACID. [Sur l'acide pernitrique.] Translated from French. Compt. Rend. (Paris), Vol. 94, p. 1111-1114, 1882.

Nitrogen peroxide formed when ozone is prepared by electric discharge in dry air was investigated. The rate at which the peroxide is formed was studied by spectroscope. Also its conversion into another oxide was studied by pressure measurements. Emphasis is also placed on the breaking down of pernitric acid to hyponitric acid.

M-10911

Bodenstein, M.
THE RATE OF THE REACTION BETWEEN NITRIC OXIDE AND OXYGEN. [Die Geschwindigkeit der Reaktion zwischen Stickoxyd und Sauerstoff.] Translated from German. Elektrochem. angew. Physik. Chemie (Weinheim), 24(13/14):183-201, July 1, 1918. 30 refs.

The oxidation of nitric oxide with oxygen was studied kinetically by pressure recordings at temperatures from 0 to 90° C. The reaction took place according to the third order process $2NO + O_2 = 2NO_2$. The rate was independent of NO_2, H_2O and SO_2 admixtures. The experiments proved that Raschig was incorrect when he assumed that NO is first rapidly oxidized to N_2O_3 which is then slowly converted to NO_2.

M-10912

Bodenstein, Max
THE SPEED OF THE COMBINATION OF NITRIC OXIDE AND OXYGEN. [Die Geschwindigkeit der Vereinigung von Stickoxyd und Sauerstoff.] Translated from German. Z. angew. Chem. (Weinheim), Vol. 31, p. 145-148, July 30, 1918.

The reaction rate of nitric oxide with oxygen was determined by batch experiments. The conversion rate was determined from the measured pressure change. Experiments were also made to elucidate possible side reactions and catalytic effects. The result of the study indicates that the reaction takes place according to the trimolecular equation $2\ NO + O_2 = 2\ NO_2$ and not as suggested by Raschig by a two stage reaction with N_2O_3 as an intermediate.

M-10913

Bodenstein, Max
FORMATION AND DECOMPOSITION OF THE HIGHER OXIDES OF NITROGEN. [Bildung and Zersetzung der höheren Stickoxyde.] Translated from German. Z. Physik. Chem. (Leipzig), Vol. 99, p. 68-123, 1922. 19 refs.

The formation and decomposition of higher nitrogen oxides was studied by determining the equilibrium constants of the reactions $2NO_2 \longleftrightarrow N_2O_4$ in the temperature range of 9-115° C and $2NO_2 \longleftrightarrow 2NO + O_2$ in the range of 225-550° C. Expressions for the logarithm of the equilibrium constants as a function of temperature were obtained. Also the rate constants of the reaction $2NO + O_2 = 2NO_2$ was determined in the temperature range of 140-390° C. Reaction mechanisms are discussed.

M-10919

Warburg, Otto
EFFECT OF CARBON MONOXIDE ON YEAST METABOLISM. [Über die Wirkung des Kohlenoxyds auf den Stoffwechsel der Hefe.] Translated from German. Biochem. Z. (Heidelberg), Vol. 177, p. 471-481, 1927. 28 refs.

The effects of carbon monoxide on respiration and fermentation of bakers yeast and the effects of light intensity and wavelength on the yeast metabolism were studied. The results showed that the respiration ferment of the yeast combines with carbon monoxide. In the presence of carbon monoxide and oxygen at a given carbon monoxide pressure the inhibition of respiration is indirectly proportional to the partial oxygen pressure. The compound formed by combination of the respiration ferment with carbon monoxide is dissociated by light and absorbs at wave lengths of 436, 546, and 578.

M-11443

Wippermann, F.
THE EFFECT OF THE MEASURING TIME INTERVAL IN DETERMINING MAXIMUM CONCENTRATIONS IN GAS DIFFUSION IN TURBULENT FLOW. [Der Effekt der Messdauer bei der Ermittlung von Maximalkonzentrationen eines sich in turbulenter Strömung ausbreitenden Gases.] Translated from German. VDI Forschungsheft, No. 483, p. 49-52, 1961. 58 refs.

The effect of the interval of measurement in computing maximum concentration values of gas diffusion in turbulent flow is illustrated. The connection between the concentration of a gas escaping continuously from a source and the meteorological parameters is treated mathematically using the Suttom formula. It is shown that three time parameters, the interval of measurement (for concentration measurements), the emission time (for the influence of the gas) and the observation time (for measuring meteorological parameters) must agree.

M-11459

Shirai, Toshiaki, Shuichi Hamada, Hiromi Takahashi, Toshihiro Ozawa, Takao Omuro and Takashi Kawakami
PHOTOCHEMICAL OXIDATION OF SULFUR DIOXIDE IN ATMOSPHERE. Translated from Japanese. Preprint. 1962. 20 refs. (Presented at the 15th Annual Meeting of the Japanese Chemical Society in April, 1962).

The concentration distribution of SO_2 and total oxides of sulfur in the area of Zao smelting plant in Yamakata Ken were determined. The concentration ratio of SO_2 to total sulfur oxides decreased with increasing distance. This clearly indicated that SO_2 was oxidized in the atmosphere. The intensity ratios of solar radiation measured in fine weather in the Zao and Tokyo areas agreed extremely well in the range of the wavelength 400 $m\mu$ to 320 $m\mu$. However, there was a big difference below 320 $m\mu$. From experiments with a mercury lamp it was found that the photochemical oxidation of SO_2 was a first order reaction and that the rate constantly increased with an increase in atmospheric moisture. Parameters tabulated for 10 to 32 different measurement locations include: concentration of SO_2 and of total sulfur oxides; temperature; wind direction and speed; weather; and correlation of total sulfur oxides with distance from the slag dump pollution source.

AUTHOR INDEX

Absolonova, Olga F-9004
Albinus, G. B-11427
Alekseyeva, M. V. E-10926
Almgren, Sigyn F-10784
Alycheva, I. S. F-10928
Andritzky, M. B-11411 B-11637
Angenend, Franz-Josef B-11638
Anichkov, S. V. F-10931
Antonelli, Giuseppe G-11444
Aquaro, G. F-10808
Arkhipov, A. S. B-6282
Arzhannikov, G. I. A-6462
Avy, Alban P. D-10821

Baader, Ernst W. F-11639
Babayants, R. A. F-11464
Bachl, Herbert B-11640
Bacskai, Gyula H-8612
Balazova, G. F-10203
Balazovjechova, L. F-10203
Bardelli, Umberto C-9460
Bardodej, Z. D-8630
Barth, Walter E-5275 E-10836
Barton, Karel H-11641
Bassleer, R. F-10790
Bauer, Hans-Dieter D-10827
Baum, Fritz D-10820
Beck, H. F-10791
Belyayeva, L. N. F-11642
Benario, Michael D-10821
Berge, Helmut K-1567 G-6533
Berka, Ivan D-9012
Berl, E. M-10907
Bertrand, Ivan F-10920
Betz, E. C. E-5309
Beukering, J. A. van F-9013
Biersteker, K. J-1257 F-8533 L-11414
Biget, P. L. F-10889
Billard, F. J-10823
Björkqvist, Karl J. B-10035
Blokker, P. C. C-11420
Bocharov, V. A. A-6462
Bodenstein, Max M-10911 M-10912 M-10913
Bodin, F. F-10874
Boedicker, Wilhelm F-10893 F-10894
Bohne, H. G-11466
Boncour, R. F-10794 F-10870
Boriani, V. A. M-10786
Boudene, C. F-7193
Bousser, Jaques A-11462
Bovay, E. G-9039
Boytsov, A. N. B-6282
Bozza, G. C-10801
Brancato, Biagio B-7206
Brandenberger, H. F-9014
Brasca, F. F-10783
Brasser, L. J. L-11418
Breuer, Hans D-10834
Bricard, Jean A-10813 J-10823
Briner, E. M-5628
Bringmann, G. F-10781
Brohult, Sven B-10153
Bronsch, K. G-10841 G-10843
Brühlmann, R. J-9010
Bruin, A. de F-10879
Brunner, M. B-11457
Bubik, Karel F-10356
Buchta, O. B-0905
Buck, M. D-4018 D-7692 D-10864
Budzinski, Karol J-10826
Buisson, H. C-10787
Bulychev, G. V. F-11426
Burda, A. S. F-2283
Busch, E. J-10550

Candura, Francesco F-10783 F-10810
Capellaro, F. F-6227 F-10805 F-10806
F-10872
Castellino, N. F-10793
Cernik, L. F-11643
Chalupa, Bohumir D-9012 F-10800
Chappuis, J. M-10908 M-10909 M-10910
Charpentier, M.-J. F-9021
Chiucchiu, Mario Novella D-7700
Cier D-10785
Cis, C. F-10869
Ciuhandu, Gheorghe D-10799
Claude, J. R. F-7193
Coenen, Wilfried D-10816
Cohrs, F. G-11452
Colinet-Lagneaux, D. F-10849
Collet, A. F-2105 F-2106
Comberg, G. B-11455
Corver, H. E-11454
Coscia, G. C. F-6227
Craveri, Angelo F-10783 F-10810
Cremer, G. F-8629
Cyrankiewicz, J. K-9129 K-9130 L-9137
Czaja, Alphons Th. G-6641 G-10914

d'Arca, S. F-10892
Datsenko, I. I. F-2591 F-6228 F-10925
F-10928 F-10930
Davies, C. N. D-10832
De Fraja Frangipane, E. J-9007
de Graaf, H. J-1257
Deloncle, M. A-10813
Del Vecchio, V. D-10795 F-10892
Derivaux, J. G-11469
Derndinger, H.-O. B-2914
Dervillée, Et. F-9021
Dervillee, P. F-9021
Desbaumes, P. F-11660
Desoille, H. F-8629 F-10794 F-10870
Devulder, B. F-2105 F-2106
Dinh-Hai, Vu F-11643
Djordevic, Sr. F-9253
Drakova, Sona F-8815
Dronia, Horst C-11644
Dubrovskaya, F. I. F-11426

Effenberger, Ernst F-8606 B-8976 F-10923
Ehnert, W. E-3204 B-3233
Eilers, H. K-11421
Elenevskii, K. F. F-10890
Elstad, Dagfinn F-11645 F-11646
Engel, W. B-11412
Epelbaum, Felix F-10916
Epstein, Danielle A-3205

Fabre, J. F-10889
Fabry, Ch. C-10787

Faerber, Klaus-Peter F-11416
Fardeau, Michel F-10862
Fatzer, R. F-10855
Fedorchuk, S. Ya. J-7994
Feist, H. J. E-5309
Ferro, O. G-11456
Fiala, E. E-10886
Fink E-0163
Fischer, Franz B-11647
Flury, Ferdinand F-10792 A-10878
Fournier, E. F-10874
Friberg, Lars L-10847
Fric, Fridrich G-10844
Frick, R. B-11457
Fridlyand, I. G. F-10859

Gadaskina, I. D. F-11648
Gaido, P. C. F-6227 F-10805 F-10806 F-10808
Gandolfi, M. M-10786
Gaultier, M. F-10874
Georgii, Hans-Walter J-2054, J-10550
Germany. Ministry of Labor and Social Welfare, North Rhine-Westphalia G-6967
Germany. Public Health Service K-10865
Germany. Society of German Engineers. Clean Air Maintenance Commission L-7079
Gernez-Rieux, Ch. F-2105 F-2106
Gervais, P. F-10874
Gessner, Hermann D-10831
Gewitz, H. S. G-10917
Ghini, G. F-8499
Gies, H. D-4018
Gilgen, A. F-7821
Gills, B. G. E-4361
Gilula, I. O. F-10895
Girard, C. F-8629
Girard-Wallon, C. F-10794
Goetz, F. W. Paul C-10789
Gräfe, Kurt C-3775 J-7526 J-10897 C-10937 K-10798
Grajetzky, Helmut F-10915
Gramer, L. F-10890
Grashchenkov, N. E. G-10841 F-10842 G-10843
Grieser, N. K-9131 K-9132 K-9133
Grochulski, J. K-9134 K-9135 K-9136
Grudzinska, Barbara F-3705
Gruetsky, Werner B-11649
Gualtierotti, R. F-8499
Gundermann, Knut-Olaf J-7367
Gwizdek, E. F-7824

Haeringen, A. van F-10879
Hagen, Joachim C-3775
Halas, L. G-11417
Halbwachs, Gottfried G-11650
Hamada, Shuichi M-11459
Hamelin F-2924
Hamilton, R. J. D-10833
Hammje, K. J-6204
Hanstedt, Walter B-11651
Harada, M. G-8462
Harders, H. D-11424
Harries, C. M-10788
Hartogensis, Freddy D-10822 D-10825
Haut, H. van G-10206
Hautefeuille, P. M-10908 M-10909 M-10910
Hayakawa, Kazuya H-2140
Hedwall, Ake E-10936
Heine, Wilhelm F-9606
Heinl, E. D-10204
Helle, G. F-8945
Helmchen, H. F-10877
Henrich, G. E-2971
Henschler, D. F-10779 F-10791 F-11470
Hermann, G. F-11660
Herrmann, E. E-7228
Hess, W. J-8628 B-9017 J-9018 B-11457
Hettche, O. B-11457
Hoegger, D. D-9038 B-11457
Hoffmann, Alex F-11416
Hoffmann, H. G-11451 B-11457
Horn, K. J-6204
Horodecki, J. K-9123
Howe, E. L. E-4361
Huch, R. B-11436
Hünigen, E. E-0562

Inada, Akitaka F-3903
Inagaki, Y. F-3211
Ishido, Shozaburo F-7532 J-11441 J-11653 J-11654
Ishikawa, K. F-7999
Ixfeld, H. D-7692

Jaccard, G. J-9008
Jaenicke, R. J-7231
Japan. Air Filtering System Designing Committee E-11422
Japan. Kanagawa Industrial Experiment Station E-6678
Japan. Ministry of Health and Welfare F-3214 K-10850
Jedrychowski, Wieslaw F-5855 F-5875
Jerzykowski, Tadeusz F-3704
Joetten, K. W. F-9605
Johswich, F. E-5137 E-11460
Jonderko, G. F-9020
Joosting, P. E. L-11419
Juda, Jan J-10826
Junge, C. J-7231
Justin-Besancon, L. F-10920

Kachulle, C. B-11655
Kalbskopf, Karl-Heinz B-10839
Kallenbach, K. B-11449
Kammerer, H. F. B-11413
Kampschulte, J. B-11431
Kaneko, Fusa F-10851
Kanitz, Stefano F-7212 D-11463
Kapalin, Vladimir F-9003
Kapalin, Vladislav F-9004
Kaserer, Hermann M-10900
Katsenelenbaum, M. S. F-11426
Kawakami, Takashi M-11459
Kawaraya, Toshio F-10851
Keller, Helmut E-10888
Keller, T. G-9039
Kern, A. B-11430
Kettner, H. J-9726
Khrustaleva, V. A. E-10926

AUTHOR INDEX

Khukhrina, Ye. V. F-8120
Kimotsuki, Kunimori M-5378 J-6192
Kimura, Kikuzu M-3160 E-4198 M-5378
J-6192
Kirilcukova, V. F-10203
Kislyakov, L. D. A-6462
Kisser, Josef G-11650
Kistov, V. V. F-10884
Kita, H. F-7999
Kiyoko, Kameda J-11442
Kiyoo, Matsui F-3903
Klein, Heinrich E-10935
Kmoch, H. E-11652
Knabe, Wilhelm G-10201
Knauer, A. J-6204
Kneller, Oswald F-7096
Knoll, H. B-11440
Kobayashi, M. H-3215
Kochanowski, S. F-7824
Kohn, Hellmuth E-10927 E-11445
Kojima, Tetsuji F-3903
Kolek, Jozef G-10844
Kolomiets, G. K. D-5381
Komura, Setsuo F-7694
Kondo, Haruo F-10852
Korolova, V. A. F-11426
Koubal, Jan D-10840
Kovnatskiy, M. A. F-10929
Kozlov, V. M. F-0093
Krilov, N. A. D-5383
Krizek, Josef D-3218
Krueger, P. D. F-10924
Kuehner, A. F-9019
Kugler, R. F-10881
Kumotsuki, Kuninori M-3160
Künkel, H. F-10877
Kus, Jan F-5855 F-5875

Ladenburg, Rudolf C-10789
Lahmann, Erdwin D-2681
Lampert, F. F. F-11656
Landwehr, Martin D-10835
Langheld, K. M-10788
Langmann, R. J-9726
Lantzsch, Kurt M-10899
Lapresle, Jean F-10862
Larcan, A. F-10883
Lassalas, A. F. A-10776 A-10777
Laux, W. F-10779
Lebbe, J. F-10794
Lebbe, M. J. J-10845
Leclere, J. F-10883
Lehnert, G. F-9019
Leineweber, Ludwig E-10836
Liegois, F. G-11469
Lindaa, Helge B-9479
Lunge, G. M-10907
Lur'e, V. L. B-0895
Lyublina, Ye. I. F-11648

Madelaine, Guy A-10813 J-10823
Maeda, H. F-7999
Maikranz, Franz B-11640
Malarde, D. F-10883
Malet, G. M-5628
Mammarella, Luigi F-7942
Marchesotti, Eugenio D-7700
Marchiaro, G. F-10808 F-10872
Marenbach, E. D-4018
Margaria, E. F-10808
Martin, H. E-2934
Martin, J. -C. F-2105 F-2106
Martin, M. B-10838
Matla, W. P. M. L-10829 J-10830
Matsushima, J. G-8462
Matysyak, V. G. F-8565
Meda, Eugenio F-8944
Medved, L. I. F-10891
Messmer, E. F-10922
Meyer, G. B-11657
Michalczyk, Georg E-6999L
Miczek, Gerhard A-10812
Miessner, H. G-11467
Mihail, Georgeta F-10152
Mikani, T. H-3215
Minkina, N. A. F-11648
Mittmann, Otfried F-7096
Miura, Toyohiko J-6192
Moegling, E. B-11438
Moeschlen, S. F-10918
Mönig, F. J. D-3044
Morando, A. E. F-10857
Morichaud-Beauchant, G. F-9021
Mörtstedt, S. -E. B-9731 B-10035
Moudra, Ludmila F-9004
Moureu, H. F-10871
Muler F-2924
Müller, H. -J. B-11428
Müller, T. B-11457
Müller, Th. J-8812
Murayama, Hisako F-10851

Nagata, Masanobu D-8964
Nakaaki, Kenji M-3160 M-5378
Nakado, Fumiki E-3231
Nakagawa, S. E-3046
Nakagawa, Tatsuko J-11441 J-11442
Nakai, Yoshiyuki E-8989
Nakamoto, Fujishige F-10852
Nakamura, Kenichi F-7999 F-11425
Namestek, Ladislav F-10356
Narasaki, Masaya J-7486
Nass, Ch. A. G. J-1257
Navratil, M. F-10846
Neumann, W. F-10791
Neuwirth, Robert D-10818
Nickel, Werner E-10932
Nicolas, P. B-10838
Nikolayevskiy, V. S. G-10384
Novak, Jiri V. A. D-11423
Nowak, Franz B-9254
Nowak, Stanislaw F-3704
Nussbaum, R. F-3224
Nussbaumer, B. F-9014

Oba, Saburo F-10896
Oborin, N. A. F-2283
Ochab, E. K-9128
Ochs, Hans-Joachim E-11658
Oehrlich, Karl Heinz E-10933
Oels, F. E-2053
Okita, Toshiichi J-8991
Okusa, Hiroshi J-6192
Oltramare, M. F-11660
Omuro, Takao M-11459
Oomichi, Sadao D-8964
Oppezzi, B. F-10857

Orione, G.			F-10872
Ozawa, Toshihiro			M-11459
Ozerskiy, A. S.			E-10926
Pajed, I.			F-9610
Palm, R.			B-11447
Paris, Jean			F-10807
Pascasio, Francesco			D-7700
Pattono, R.			F-10872
Pavoni, Pietro			F-5749
Pedrero, Pablo Sanz			D-9015
Perani, G.			F-10869
Pergola, Frederic			F-10920
Perla, V.			F-10793
Perrelli, G.		F-6227	D-10876
Peters, Wulf			B-11448
Peterson, Folke			D-4902
Petersson, Folke			E-4862
Petr, B.	F-7240	F-8995	F-8996
		F-9000	F-9003
Petrilli, F. L.			F-7212
Petry, Heinz		F-10860	F-10921
Pfeiffer, U.			D-3044
Pfeiffer, W.			M-5628
Picard, L.			F-10883
Picko, V.		F-9000	F-10202
Pietrowski, Jozef		F-5855	F-5875
Pilet, P. E.			J-9008
Poche, Reinhard			F-7096
Poland. Ministry of Mining and Power Engineering			K-11659
Policard, A.			F-2105
Poraznik, I.			F-9610
Portheine, F.			F-10924
Pradel, Jaques		A-10813	J-10823
Prerovska, Ivana			F-8815
Presske, Paul			B-11435
Prietsch, W.			E-0562
Prochazka, Rudolf			D-10814
Prokopenko, A. V.			J-7994
Pukhov, V. A.			F-0074
Rasch, Rudolf			B-10867
Rasche, B.			F-9727
Raymond, V.			F-3224
Reichow, H. B.			K-9245
Reiter, R.			F-3048
Rennerfelt, Erik			J-11661
Reutov, O. A.			M-10866
Ricci, C.			F-10805
Richter, J.		K-9229	B-11457
Riess, Fritz			D-10820
Rodrigo, Pedro Ramos			D-9015
Rohe, K. H.			D-3044
Romagnoli, G.			J-11465
Rosettani, E.			D-10876
Rosmanith, Jindrich			F-10356
Rostrup, Ove			J-11662
Rubino, Giovanni Francesco			F-8627
Ruf, H.			B-10887
Rylander, Ragnar			L-10847
Rylova, M. L.			F-11648
Rzeznik, Jerry			D-10819
Saccani, C. F.			J-9007
Sakamoto, Hiroshi			F-3903
Sapozhnikov, A. P.			F-11437
Sawano, Tsutomu			J-6192
Sawicki, Bohdan		F-5855	F-5875
Scassellati Sforzolini, Giuseppina			D-7700
Schaetzle, P.			F-9014
Schaller, K. H.			F-9019
Schaufler, Erwin			E-10933
Scheel-Thomsen, A.			F-11468
Schleusing, Gottfried			F-10882
Schlipköter, H. W.			F-10868
Schlunk, C.			C-10937
Schmidt, Karl Georg			D-10815
Schmidt, Karl Rudolf		E-10933	E-10934
Schmidt, P.	F-7240	F-8995	F-8996
			F-9000
Schnitzler, Hermann			E-11446
Schoenbeck, Helfried			G-11434
Schulz, Hugo			F-10780
Schumacher, Hans Joachim	M-10903	M-10904	M-10905
			M-10906
Schutz, Alfred			D-10817
Schütze, Walter			J-7526
Seisaburo, Sekido			J-11442
Semprebene, Luciano			F-5749
Senoa, Y.			H-3215
Shashkov, V. S.			F-11667
Shirai, Toshiaki			M-11459
Siegenthaler, P.			F-8945
Sirtori, Carlo			F-10898
Sklenovsky, A.			F-10873
Sordelli, Danilo			E-1125
Spengler, Günter			E-6999L
Sprenger, Gerhard	D-10902	M-10903	M-10904
		M-10905	M-10906
Sprung, Siegbert			B-7949
Spurny, Kvetoslav			A-10812
Stankovic, M.			F-9253
Starke, K.			E-2957
Stehn, Werner			E-3050
Steinhübel, Gejza	G-11417	G-11433	G-11663
Sterz, H.			F-10880
Stier, A.			F-10791
Stöfen, D.		F-10854	F-10856
Strandberg, Lars			F-9958
Stratmann, H.	D-4018	G-10206	J-10863
			D-10864
Straubel, M.			D-2952
Strzelczyk, P.			F-10875
Suzuki, Hozumi			D-11664
Suzuki, T.			F-7999
Svistov, P. F.			D-2954
Sweden. Ministry of Communication. Expert Group for Development in the Field of Auto Exhaust		E-6280	K-9009
Switzerland. Commission for Air Hygiene		L-9006	D-9037
Symon, Karel		F-9003	F-9004
Szadkowski, D.			F-9019
Sztachelski, J.		K-9131	K-9135
Tacquet, A.		F-2105	F-2106
Tada, Osamu	M-3160	M-5378	J-6192
Taga, T.			B-2148
Takahashi, Hiromi			M-11459
Takai, Masami			E-3231
Talenti, M.			F-10892
Tanaka, Tamie			J-11441
Taniewski, J.			F-10881
Tanner, R.			B-11461
Tchicaloff, M.			F-11660
Teisinger, J.			F-9535

AUTHOR INDEX

Terabe, Motoji D-3964
Terpstra, J. L-10329 J-10330
Teubner, J. J-6204
Thürauf, W. B-3233
Tiunov, L. A. F-10884
Tomono, Yoshiro F-4204 F-10852 F-10853
Tomsikova, A. F-11643
Torelli, Giorgio F-8626
Toyama, Toshio F-3848 F-7999 F-10852
  F-10853
Trautz, Max M-10901
Trombi Giarrusso, O. J-10809
Trompeo, G. F-10806 J-10809
Troquet, J. F-10849
Truche, M. R. F-10778
Truffert, L. F-10794 B-11457
Truhaut, R. F-7193
Tsutomu, Umezawa F-3239
Tsvetkov, V. P. F-11437
Tsybalyskiy, B. A.. F-11437
Turkin, Y. I. D-2954
Turletti, G. J-10809
Turolla, V. J-9007
Turovskiy, V. D. F-0093

Ulmer, W. T. F-9727

van-Nong, Pham F-11643
Vasil'eva, G. A. F-10884
Vassy, Arlette J-10837
Vauzelle, A. F-10889
Verein Deutscher Ingenieure
  See Germany. Society of German Engineers
Veverka E-9607
Viereck, H. J. F-10413
Vigliani, Enrico Carlo F-11665
Volker, W. G-10917
Vroege, D. F-10879
Vymola, F. F-11643
Vyskocil, Jiri D-9012

Wachler, G. D-7832
Wachsmuth, W. F-10413
Wahnschaffe, E. E-5137
Walkenhorst, Wilhelm D-10828
Walter, Erwin D-10824
Wanner, H. U. F-7821
Warburg, Otto M-10861 M-10919
Warschun, L. D-4018
Wasserman, M. F-10152
Watanabe, Hiromu F-10851
Weber, E. J-10550
Wegiel, A. F-9020
Weihe, A. von B-11412
Wicke, E. E-8036
Wickert, Kurt D-8468
Wiethaup, Hans K-6124 K-10802 K-10803
  K-10804 K-10848
Wildermuth, W. F-10918
Wippermann, F. M-11443
Wolf, W. E-2957
Wolfermann, H. -F. B-11455
Wotschke, J. B-11636
Wuhrmann B-11666

Yamaoka, Shigeo F-10851
Yan-Tsei, U. M-10866
Yelfimova, Ye. V. F-11667
Yesipova, I. K. F-6842
Yokogawa, Tetsuya E-3989
Yokoyama, E. F-7999
Yushko, K. Ya. F-11426

Zahn, Richard G-9757 G-11415
Zankl, W. B-11429
Zanon, Domenico E-1125
Zdrazil, Josef D-10840
Zenji, Horai F-8396 F-11458
Zenk, H. F-2959 F-10875
Zernik, Franz F-10792 A-10878
Zeschmann, E. -G. E-10886
Zhilin, V. G. L-10858
Zorn, Hans F-10811
Zorn, O. F-10924
Zurkowski, A. F-9020

LANGUAGE INDEX

General

French A-3205 A-10776 A-10777 A-11462
German A-10812 A-10813 A-10878
Russian A-6462

Emission Sources

Czech B-0905
Danish B-9479
French B-10838
German B-2914 B-3233 B-7949 B-8976 B-9017 B-9254 B-10839 B-10867 B-10887 B-11411 B-11412 B-11413 B-11427 B-11428 B-11429 B-11430 B-11431 B-11432 B-11435 B-11436 B-11438 B-11439 B-11440 B-11447 B-11448 B-11449 B-11450 B-11455 B-11457 B-11461 B-11636 B-11637 B-11638 B-11640 B-11647 B-11649 B-11651 B-11655 B-11657 B-11666
Italian B-7206
Japanese B-2148
Russian B-0895 B-6282
Swedish B-9731 B-10035 B-10153

Atmospheric Interaction

Dutch C-11420
French C-10787
German C-3775 C-10789 C-10937 C-11644
Italian C-9460 C-10801
Russian C-10885

Measurement Methods

Czech D-3218 D-8630 D-9012 D-10204 D-10840 D-11423
French D-10785
German D-2681 D-2952 D-3044 D-4018 D-7692 D-7832 D-8468 D-9037 D-9038 D-10799 D-10814 D-10815 D-10816 D-10817 D-10818 D-10819 D-10820 D-10821 D-10822 D-10824 D-10825 D-10827 D-10828 D-10831 D-10832 D-10833 D-10834 D-10835 D-10864 D-10902 D-11424
Italian D-4209 D-4210 D-7700 D-10795 D-10876 D-11463
Japanese D-8964 D-11664
Russian D-2954 D-5381 D-5383
Spanish D-9015
Swedish D-4902

Control Methods

French E-11454
German E-0163 E-0562 E-2053 E-2934 E-2957 E-2971 E-3050 E-3204 E-4361 E-5137 E-5275 E-5309 E-6999L E-7228 E-8036 E-9607 E-10836 E-10886 E-10888 E-10927 E-10932 E-10933 E-10934 E-10935 E-11445 E-11446 E-11460 E-11652 E-11658
Italian E-1125 E-6835
Japanese E-3046 E-3231 E-4198 E-6678 E-8989 E-11422
Russian E-10926
Swedish E-4862 E-6280 E-10936

Effects - Human Health

Czech F-8815 F-8995 F-8996 F-9000 F-9003 F-9004 F-9535 F-10202 F-10356 F-10800 F-10846 F-10873
Danish F-11468
Dutch F-8533 F-9013 F-10879
French F-2105 F-2106 F-2924 F-3224 F-7193 F-7824 F-8629 F-8945 F-9021 F-10152 F-10778 F-10790 F-10794 F-10807 F-10849 F-10862 F-10870 F-10871 F-10874 F-10883 F-10889 F-10920 F-11660
German F-2959 F-3048 F-7096 F-7240 F-7821 F-8606 F-9014 F-9019 F-9020 F-9605 F-9606 F-9727 F-10413 F-10784 F-10779 F-10780 F-10781 F-10791 F-10792 F-10811 F-10842 F-10854 F-10855 F-10856 F-10860 F-10868 F-10875 F-10877 F-10880 F-10881 F-10882 F-10893 F-10894 F-10895 F-10896 F-10915 F-10916 F-10918 F-10921 F-10922 F-10923 F-10924 F-11416 F-11470 F-11639 F-11645
Italian F-5749 F-6227 F-7212 F-7942 F-8499 F-8626 F-8627 F-8944 F-10783 F-10793 F-10805 F-10806 F-10808 F-10810 F-10857 F-10869 F-10872 F-10892 F-10898 F-11665
Japanese F-3211 F-3214 F-3239 F-3848 F-3903 F-4204 F-7532 F-7694 F-7999 F-8396 F-10851 F-10852 F-10853 F-11425 F-11458
Norwegian F-11646
Polish F-3704 F-3705 F-5855 F-5875

Effects - Human Health (continued)

Russian	F-0074	F-0093	F-2283
	F-2591	F-6228	F-6842
	F-8120	F-8565	F-10859
	F-10884	F-10890	F-10891
	F-10925	F-10928	F-10929
	F-10930	F-10931	F-11426
	F-11437	F-11464	F-11642
	F-11648	F-11656	F-11667
Serbocroatian			F-9253
Slovak	F-9610	F-10203	F-11643
Swedish			F-9958

Effects - Plants, Livestock

Czech			G-11433
French		G-11453	G-11469
German	G-6533	G-6641	G-6967
	G-9039	G-9757	G-10201
	G-10206	G-10841	G-10843
	G-10914	G-10917	G-11415
	G-11434	G-11451	G-11452
	G-11466	G-11467	G-11650
Italian		G-11444	G-11456
Japanese			G-8462
Russian			G-10384
Slovak	G-10844	G-11417	G-11663

Effects - Materials

German			H-11641
Hungarian			H-8612
Japanese		H-2140	H-3215

Air Quality Measurements

Danish			J-11662
Dutch			J-1257
French	J-6787	J-9008	J-10837
			J-10845
German	J-2054	J-6204	J-7231
	J-7367	J-7526	J-8628
	J-8812	J-9010	J-9018
	J-9726	J-10550	J-10823
	J-10826	J-10830	J-10863
			J-10897

Air Quality Measurements (continued)

Italian	J-9007	J-10809	J-11465
		J-11653	J-11654
Japanese	J-6192	J-7486	J-8991
		J-11441	J-11442
Russian	J-2953	J-7994	J-10782
Swedish			J-11661

Legal and Administrative

Dutch			K-11421
French	K-2294	K-2301	K-2295
		K-10796	K-10797
German	K-1567	K-2282	K-6128
	K-9229	K-9245	K-10798
	K-10802	K-10803	K-10804
		K-10848	K-10865
Japanese			K-10850
Polish	K-9128	K-9129	K-9130
	K-9131	K-9132	K-9133
	K-9134	K-9135	K-9136
			K-11659
Swedish			K-9009

Standards and Criteria

Dutch	L-11414	L-11418	L-11419
German	L-7079	L-9006	L-10829
Polish			L-9137
Russian			L-10858
Swedish			L-10847

Basic Science and Technology

French	M-10908	M-10909	M-10910
German	M-10788	M-10861	M-10899
	M-10900	M-10901	M-10903
	M-10904	M-10905	M-10906
	M-10907	M-10911	M-10912
	M-10913	M-10919	M-11443
Italian			M-10786
Japanese	M-3160	M-5378	M-5628
			M-11459
Russian			M-10866

SUBJECT INDEX

Absorption E-8989
Accidents
  [See: Automobile Accidents]
Acids
  [See: Amino Acids; Hydrofluoric Acids; Nucleic Acids; Sulfuric Acid]
Acoustic Detection D-10821
Adaptation F-10779
Additives
  [See: Alkaline Additives]
Adsorption E-4862 J-8991
Acid Smuts J-8991
Aerosols H-2140 D-2954 D-3044 F-3048 E-4198 D-5381 J-7231 F-7942 A-10813 D-10821 J-10823
  [See also: Radioactive Aerosols; Sodium Chloride Aerosols]
Afterburners
  [See: Catalytic Afterburners]
Air Conditioning Equipment E-11422
Air-Fuel Ratio E-10926
Air Ionization K-2591
Air Quality Measurement Programs K-2282
Air Quality Measurements D-2681 F-3214 J-6204 G-11451 B-11455 D-11463
Air Quality Standards L-11414 L-11418 L-11419
Air Resource Management B-9017 E-11454
Aitken Particle Counters J-11654
Alarm Systems K-6124 L-11414 K-11421
Alcohols F-11426
Alkaline Additives E-5137
Aluminum H-11641
Alveoli F-6342 F-9727 F-10790
Amino Acids M-10788
Ammonia B-11455
Analysis
  [See: Colorimetric Analysis; Mathematical Analyses; Polarographic Analysis; Statistical Analyses; Urinalysis]
Analytical Methods A-3205 E-6999L D-9038
Animals F-10895 G-11452
Anthracosis F-10356
Antibiotics F-2106
Antibodies F-3903
Arsenic Compounds F-9610 G-11467
Aspirators J-7994
Asthma F-8533 F-11643
Atmospheres
  [See: Controlled Atmospheres; Indoor Atmospheres; Lower Atmosphere]
Atmospheric Attenuation M-5378
Austria B-11647 G-11650
Automatic Samplers D-11463
Automobile Accidents F-10871
Automobiles J-7367 F-10923
Automotive Emission Control E-2934 E-2957 E-3231 E-10886
Automotive Emissions K-9009 B-10887
Automotive Exhausts E-0562 J-2054 E-2957 F-3214 E-3231 F-3239 E-6280 J-6787 E-7228 J-7367 J-8812 F-9014 B-9017 K-9229 B-9731 B-10035 J-10550 F-10784 J-10837 J-10845 F-10871 F-10879 E-10886 E-10926 B-11457 F-11468

Bacteria F-2106 J-6204 M-10899 M-10900 J-11441 J-11442 J-11465

Barns
  [See: Hog Barns]
Battery Manufacturing F-9021 B-11639
Belgium K-2301 G-11469
Benzo(a)pyrene J-10845
Benzopyrene F-10868
Beryllium F-0093
Beryllium Compounds F-0093 F-11642
Birch Trees G-11650
Blood Cells F-8945 F-8995 F-8996 F-9000 F-9003 F-9020 F-9610 F-10880 A-11462
Blood Chemistry F-3704 F-3903 J-6787 F-9019 F-9535 F-10202 F-10783 F-10805 F-10808 F-10810 F-10894 F-10915 F-10913
  [See also: Carboxyhemoglobin; Hematology]
Blood Pressure F-10890
Boilers B-2148 E-4862 F-11656
Brain Damage F-10862 F-10896
Brain Disorders F-10873
Brain Effects F-7694
Breathing F-7942
Bronchial Cancer F-7096 F-10413
Bronchitis F-6842 M-10786 F-10846 E-11458

Bronchodilators F-4204
Buildings J-1257 J-6192 F-7532 F-10806 E-11422 J-11441 J-11442 J-11465 J-11654 F-11656
  [See also: Indoor Atmospheres]
By-Product Recovery E-3046 E-9607 E-11460
  [See also: Combustion Products]

Cadmium Compounds D-7832
Cancer
  [See: Bronchial Cancer; Lung Cancer]
Carbohydrates F-6228
Carbon Black F-9958
Carbon Dioxide A-6462 F-7532 G-11453 B-11455

Carbon Monoxide J-2054 F-2283 K-2591 F-2924 F-2934 D-2952 F-2959 F-3239 F-3705 F-6227 J-6787 F-7193 J-7367 F-7694 F-8606 D-8630 J-8812 F-8815 F-8945 J-9008 J-9010 F-9014 D-9015 J-9018 J-9726 J-10550 D-10785 F-10793 D-10795 D-10799 F-10805 F-10806 J-10809 J-10845 L-10847 M-10861 F-10871 A-10878 M-10899 M-10900 F-10915 G-10917 F-10918 M-10919 F-10928 F-10929 F-10931 F-11648 F-11656

Carbon Monoxide Poisoning F-0074 F-3704 F-5855 F-5875 F-6228 F-8626 F-8627 F-8629 F-8944 D-9012 F-10783 F-10784 F-10794 F-10800 F-10807 F-10808 F-10810 F-10811 F-10859 F-10860 F-10862 F-10868 F-10869 F-10870 F-10872 F-10873 F-10874 F-10875 D-10876 F-10877 F-10879 F-10881 F-10882 F-10883 F-10884 F-10892 F-10893 F-10894 F-10895 F-10896 F-10916 F-10920 F-10921 F-10922 F-10923 F-10924 F-10925 F-10930

Carboxyhemoglobin F-7193 F-8606 D-8630 D-9015 F-10783 F-10793 F-10794 D-10795 F-10806 F-10811 F-10872 D-10876 F-10879 F-10880 F-10892 F-10923 F-10925 F-11648 F-11656
  [See also: Blood Chemistry]

Cardiovascular Disease F-8815

Cardiovascular Disorders F-10890

Castor Beans F-3903

Catalysts E-7228

Catalytic Afterburners E-5309 E-7228 E-8036

Cattle G-11444 G-11456 G-11466

Cells
  [See: Blood Cells; Fuel Cells]

Cell Metabolism F-10873

Cement Dust F-9004 G-10914 G-11434

Cement Kilns B-7949

Cements F-3224

Centrifugal Separators E-10836 E-10932 E-10933 E-10934 E-10935

Chemical Composition B-7949

Chemical Compounds
  [See: Arsenic Compounds; Beryllium Compounds; Cadmium Compounds; Chlorine Compounds; Lead Compounds; Magnesium Compounds; Manganese Compounds; Mercury Compounds; Organic Compounds; Sulfhydril Compounds; Sulfur Compounds]

Chemical Processes E-1125 B-6282

Chemical Reactions M-10788 D-10902 M-10903 M-10904 M-10905 M-10906 M-10907 M-10908 M-10909 M-10910 M-10911 M-10912 M-10913

Chemistry
  [See: Blood Chemistry]

Children F-7212 F-7240 F-7999 F-8533 F-8995 F-8996 F-9000 F-9003 F-9004 F-9610 F-10202 F-10203 D-10204 F-10853 F-11416 F-11426 F-11656

Chimneys
  [See: Domestic Chimneys]

Chlorides F-10781

Chlorine Compounds B-11436

Cholinesterase K-2591

Chromatography D-7700 D-10864

Circulation
  [See: Wind Circulation]

Clean Air Act K-10802

Coal B-2148 F-10356 F-11437

Coal Dust F-3211 F-8396

Coke E-3204

Coke Oven Gas E-3204 B-3233

Collectors
  [See: Dust Collectors]

Colorimetric Analysis E-5383

Colorimetric Methods D-10864

Comas F-10920

Combustion D-7692 B-11447

Combustion Gases B-2148 A-6462 D-8468

Combustion Products B-11447

Commercial Equipment D-10795

Compounds
  [See: Chemical Compounds]

Concentration
  [See: Maximum Allowable Concentration]

Control Agencies B-9017

Control Equipment B-10838 E-11652
  [See also: Automotive Emission Control; Catalytic Afterourners; Centrifugal Separators; Commercial Equipment; Cyclone Separators; Dust Collectors; Electrostatic Precipitators; Filters; Scrubbers; Separators; Wet Cyclones]

Controlled Atmospheres F-10780

Control Methods K-1567 G-6967 B-10153
  [See also: pH Control]

Control Programs K-2295 K-10798 K-10865

Copper G-11467 H-11641

Corrosion H-8612 B-11436 H-11641
  [See also: Materials Deterioration]

Counters
  [See: Particle Counters]

Cows G-11469

Criteria
  [See: Design Criteria]

SUBJECT INDEX

Cupolas B-10838 E-11445 E-11446
Cyanides F-10882 F-10931
Cyclones
[See: Wet Cyclones]
Cyclone Separators E-5275
Cytochrome C F-2283
Czechoslovakia F-9000 F-9004 F-10356

Damage
[See: Brain Damage; Plant Damage]
Denmark J-11662
Design Criteria B-11430 B-11636 B-11647 B-11657
Deterioration
[See: Materials Deterioration]
Diabetics F-8629
Diesel Engines B-2914 E-6280
Diffusion C-10801
Diffusion Models C-3775 J-10782
Dioxides
[See: Carbon Dioxide; Nitrogen Dioxide; Sulfur Dioxide]
Diseases
[See: Physiological Disorders; Respiratory Diseases]
Disorders
[See: Physiological Disorders]
Dispersion K-9132 J-10782 L-10858 C-10885 C-11420
Dogs F-11468
Domestic Chimneys K-10796
Domestic Heating E-3050 E-4361 E-6835 B-9479 F-10898
Driving Practices B-10035
Dust Collectors E-5275
Dusts F-2105 F-2106 F-3224 F-3903 D-4902 G-6533 G-6641 J-7486 J-7526 B-7949 D-8468 D-8964 J-9008 K-9130 F-9605 F-9727 A-10812 D-10814 D-10815 D-10816 D-10817 D-10818 D-10819 D-10821 D-10822 D-10824 J-10826 L-10829 J-10830 D-10831 D-10832 D-10833 D-10835 F-10851 F-10868 J-10897 G-10914 E-10927 E-10932 E-10933 E-10934 E-10935 F-11416 G-11417 E-11422 G-11433 F-11437 J-11441 J-11442 E-11445 E-11446 J-11465 J-11653 J-11654 E-11658 G-11663

Ear disorders F-2924
Economic Loss G-11456
Edema
[See: Pulmonary Edema]
Electrical Equipment H-3215
Electrochemical Methods D-11423
Electroencephalography F-7694 F-10794
Electron Microscopy M-3160
Electrostatic Precipitation E-3204 E-11446 J-11653
Electrostatic Precipitators B-11638
Emission Control
[See: Automotive Emission Control]
Emission Sources
[See: Automotive Emissions; Industrial Emission Sources]
Emission Standards E-0562 D-9037 K-10798
Emphysema F-6842 F-11458
Enforcement Procedures K-2294
Engines
[See: Diesel Engines; Gasoline Engines; Rotary Piston Engines]
Enzymes F-5875 G-10384 F-10930
Epidemiology J-1257
Equipment
[See: Air Conditioning Equipment; Commercial Equipment; Control Equipment; Electrical Equipment]
Erythrocytes F-6227
Ethylene Oxide D-5383
Europe L-11414
Exhausts
[See: Automotive Exhausts]
Experimental Methods F-10794
Exposure Methods G-6533 G-9757 G-11415

Facilities
[See: Medical Facilities]
Farms G-11451
Feasibility Studies E-11460
Fibrosis F-11458
Filter Fabrics E-10927
Filters E-4198 D-10834 E-11422 E-11445 E-11446 B-11638 E-11658
[See also: Membrane Filters]
Fir Trees G-11650
Flame Chamber Melting Process B-11636
Flow Rates F-7999
[See also: Wrights Peak Flow Rate]
Fluorides F-10203 G-10841 G-10843 G-11456 G-11466
Fluorine G-11444 G-11469
Fluorine Compounds F-10842
Fluorosis G-11469
Fly Ash F-9003 B-11412 B-11651
Fog D-5381
Foods F-10842
Formaldehyde J-6192
France K-2294 K-2295 J-6787 J-9008 K-10797 B-11428 G-11453 E-11454
Fuel
[See: Air-Fuel Ratio]
Fuel Cells B-2914
Fuels F-10784 B-10887
Fumes E-1125

Fungi F-11643 J-11661 J-11662
Furnaces B-11440 E-11445
  [See also: Cupolas]

Garages J-9010 J-10809
Gases D-7692 A-10878 E-10933
  [See also: Coke Oven Gas; Combustion Gases; Stack Gases]
Gasoline Engines B-2914
Gasoline Vapors F-8565
Gas Samplers D-10785
Gas Sampling D-2681 D-4018
Generators
  [See: Ozone Generators]
Genoa (Italy) F-10857
Germany E-2053 K-2282 E-2934
  D-2952 E-2957 B-9254
  K-10865 K-11421 B-11439
  B-11448 B-11449
Glands F-10931
Glucose-6-phosphate F-6227
Glutathione F-6227
Glycogen F-5855
Great Britain K-10802
Growth
  [See: Particle Growth]
Guinea Pigs F-2106

Hamburg (Germany) J-7526
Health Impairment F-2924 F-7532 F-7821
  [See also: Occupational Health Treatment and Aids] G-11452 G-11467
Health Statistics F-3214
Hearing Deficit F-10869 F-10875 F-10881
Heating
  [See: Domestic Heating]
Hematology F-3903 F-9000 F-9004
  F-11416 F-11667
Hemodynamic Modifications F-8627
Hemoglobin Interactions F-8944 M-10861 F-10880
Hi-Vol Samplers D-8964
Hog Barns B-11455
Hogs G-11451 G-11466
Hydrocarbons B-0895 D-4210 D-7700
  F-11426
Hydrofluoric Acid G-11467 G-11650
Hydrogen M-10900
Hydrogen Sulfide B-11455
Hypersensitivity F-10811

Immunology F-10870 F-10928
Incineration B-11450 E-11652
Incinerators E-5309 B-7206 B-8976
  B-9254 B-11411 B-11412
  B-11413 B-11427 B-11428
  B-11429 B-11430 B-11431
  B-11432 B-11435 B-11436
  B-11438 B-11439 B-11440
  B-11448 B-11449 B-11461
  B-11638 B-11640 B-11647
  B-11651 B-11649 B-11655
  B-11657 E-11658 B-11666
Indicators
  [See: Plant Indicators]
Indoor Atmospheres J-7436 F-7532 J-9007
  [See also: Buildings; E-11422 J-11441 J-11442
  Hog Barns] J-11465 J-11653 J-11654
Industrial Emission
  Sources B-0895 E-2053 E-2971
  E-7228 F-7824 E-8036
  B-8976 F-9003 F-9004
  K-9136 B-10153 F-11426
  G-11434 B-11438

Institutes
  [See: Research Institutes]
Instrumentation D-2954 D-10819
Ionization
  [See: Air Ionization]
Ions F-8499 D-10816
Ireland K-10804
Iron H-8612
Iron Oxides G-6533 F-9013
Isotopes F-5749
Italy K-10803 G-11456 J-11465

Japan M-3160 F-8396 K-10850
  F-10853 J-11441 J-11442
  F-11458

Kidney Disorders F-10890
Kinetics
  [See: Reaction Kinetics]

Laboratory Animals F-9605
Lead F-9019 J-9726 F-10890
  A-11462 G-11467
Lead Compounds J-8812 K-9253 F-9535
  [See also: Tetraethyl Lead] J-10845 F-10855
Lead Poisoning F-11468
Leaves G-8462 G-10384 G-11663
Legislation K-1567 K-2301 K-6124
  [See also: Local G-6967 K-9128 K-10802
  Government] K-10803 K-10804 K-10848
  K-10850 E-10886
Leningrad F-11464
Light Radiation C-10787
Limestone E-5137
Lipids F-8815
Litigation F-10922
Liver F-5855 F-5875
Local Government K-10803
Lower Atmosphere C-10789
Lung Cancer F-10857 F-10898 F-11416
Lungs F-8396 F-8499 F-9605

Magnesium Compounds F-7824
Management
  [See: Air Resource Management]
Manganese F-11645 F-11646 F-11660
  F-11665
Manganese Compounds F-9013 F-9020 F-9021
  F-9606 F-10152
Manganese Poisoning F-10152 F-11639
Manufacturing
  [See: Battery Manufacturing; Plastics Manufacturing; Rubber Manufacturing]

SUBJECT INDEX

Materials Deterioration H-2140
[See also: Corrosion]
Mathematical Analyses J-2953 C-3775 D-10204 J-10826 D-11424 M-11443
Maximum Allowable Concentration E-0562 J-2953 K-6124 L-7079 L-9006 K-9137 M-11443 B-11461
Measurement
[See: Air Quality Measurements]
Measurement Methods K-9131 K-10865 F-10925
[See also: Methods]
Medical Facilities A-10776 A-10777
Membrane Filters A-10812 D-10827
Memory F-10800
Mercury Compounds M-10866
Metabolism F-6228 F-8945 F-10793 G-10843 F-10882
[See also: Cell Metabolism; Yeast Metabolism]
Metabolism (Bacteria) M-10899
Metallurgical Processes
[See: Primary Metallurgical Processes]
Metal Poisoning F-9020 F-9253 F-11660
Metals M-10861
Meteorology J-2054 J-6204 G-11451
[See also: Micrometeorology]
Methods
[See: Analytical Methods; Colorimetric Methods; Control Methods; Electrochemical Methods; Experimental Methods; Measurement Methods; Photometric Methods; Polarographic Methods; Quinine Sulfate Method; Research Methodologies; Spectrometry; Spectrophotometry; Statistical Methods; Turbidimetry]
Mice F-10884
Micrometeorology C-9460
Microorganisms J-9008
Microscopes D-5381
Microscopy
[See: Electron Microscopy]
Mineral Processing A-6462
Mining F-9013 F-10152
Models
[See: Diffusion Models; Respiratory Tract Models]

Monitoring D-2681 J-7994 K-10798 D-10831 D-10833
Morbidity L-11419 F-11464
Mortality L-11419

Nervous System F-3705 D-9012 F-10807 F-10849 F-10877 F-10895
Netherlands K-10848 L-11414 K-11421
Nitric Oxide E-3204 B-3233 M-5628 M-10905
Nitrogen Dioxide B-2148 D-4018 J-6192 F-9958 G-10206 F-10779 F-10791 F-11425
Nitrogen Oxides E-1125 D-3218 E-5309 F-7240 F-8995 F-8996
Nitrogen Oxides (continued) J-9013 M-10901 D-10902 M-10903 M-10904 M-10906 M-10907 M-10908 M-10909 M-10910 M-10911 M-10912 M-10913 M-11470
North Rhine-Westphalia G-6967 F-7096
Norway F-11645 F-11646
Nucleic Acids M-10786

Occupational Health F-2959 F-7824 D-9012 F-10784 D-10876 F-10924 F-11639 F-11665
[See also: Health Impairment]
Odors B-11651
Oil Burners E-4361 J-8628 B-9479
Olfactory Perception F-10791
Organic Compounds L-7079 D-7692
Organic Vapors E-5309
Ovulation F-8565
Oxidants H-2140
Oxidation M-3160 M-5378 M-5628 D-10785 M-10907 M-10911
Oxides F-10868 F-10882
[See also: Sulfur Oxides]
Ozone F-7821 F-8499 A-10776 A-10777 F-10778 F-10779 F-10780 F-10781 C-10787 M-10788 C-10789 F-10791 F-10792 J-10837 F-10849 F-10889 D-10902 M-10903 M-10904 M-10905 M-10906 M-10908 M-10909 M-10910
Ozone Generators A-10776
Ozone Poisoning F-10790 F-10792

Palladium H-3215
Paris J-10845
Particle Counters D-3044 D-10825 J-11653
[See also: Aitken Particle Counters]
Particle Growth E-4862
Particle Shape D-10828
Particle Size D-3044 D-5381 J-7231 F-8120 A-10813 D-10832 D-10834
Particulates M-3160 E-6835 J-9007 D-10825 D-10828
[See also: Suspended Particulates]
Particulate Sampling D-4902 D-10816 D-10817 D-10833
Penalties K-9130
Perception
[See: Olfactory Perception]
Pesticides F-10891
Pesticide Toxicology F-10891
pH Control A-6462
Phenols D-10840
Photometric Methods E-0163 D-10799
Photooxidation M-11459
Photosynthesis G-10917
Physiological Disorders
[See: Brain Disorders; Cardiovascular Disorders; Ear Disorders; Kidney Disorders]

Pilot Plant B-11412
Planning and Zoning K-9129 K-9133 K-9229 K-9245
Plans and Programs K-9135
Plant Cell Respiration M-10919
Plant Damage F-3224 G-6641 G-8462 G-9039 G-9757 G-10201 G-10206 G-10384 G-10914 G-11415 G-11417 G-11433 G-11434 G-11444 G-11454 G-11456 G-11466 G-11650 G-11663
  [See also: Plants; Trees]
Plant Growth G-6533 G-9039 G-10844
Plant Indicators J-9008
Plants G-6533 E-11454
Plastics B-0905
Plastics Manufacturing B-0905
Pneumoconiosis F-8120 F-9605 F-10356 F-11437
Pneumonia F-9013 F-9021 F-9606 F-11642 F-11645 F-11646 F-11665
Poisoning
  [See: Carbon Monoxide Poisoning; Lead Poisoning; Manganese Poisoning; Metal Poisoning; Ozone Poisoning; Toxicity]
Poland K-9128 K-9129 K-9130 K-9131 K-9132 K-9133 K-9134 K-9135 K-9136 L-9137 K-11659
Polarographic Analysis B-0905
Polarographic Methods D-9015 D-10840
Police
  [See: Traffic Police]
Pollutants A-3205
Power Plants J-10863
  [See also: Steam Plants]
Power Production J-2953 L-10858 F-11437 B-11637
Precipitation B-10153
  [See also: Electrostatic Precipitation]
Precipitators
  [See: Electrostatic Precipitators]
Pressure
  [See: Blood Pressure]
Primary Metallurgical Processes F-10203 G-11417 G-11433 G-11467
Processes
  [See: Chemical Processes; Flame Chamber Melting Process; Mineral Processing; Primary Metallurgical Processes]
Process Modification B-6282
Programs
  [See: Air Quality Measurement Programs; Control Programs; Plans and Programs; Research Programs]
Protective Zones K-9136
Pulmonary Edema F-10792 F-10849 F-11470
Pulmonary Function F-5749 F-10851 F-10852
Pulmonary Resistance F-3848 F-11425
Pulmonary Ventilation F-7999 D-8630 F-10846 F-10853
Pyrite Flotation A-6462
Quartz Dust J-10830
Quinine Sulfate Method D-4210
Rabbits F-2283 F-10870 F-10918
Radiation
  [See: Light Radiation; Solar Radiation; X-rays]
Radioactive Aerosols E-4198
Radioactive Tracers M-10866
Rats F-10928
Reaction Kinetics M-5628 F-8944 M-10901 M-10903 M-10904 M-11459
Reaction Mechanisms F-8626 M-10913
Recording Systems D-9038
Recovery
  [See: By-Product Recovery]
Regulations K-2294 K-9129 K-9130 K-9131 K-9132 K-9133 K-9134 K-9135 K-10796 K-10797 K-10848 K-10850 K-10865 K-11421 G-11453
Reporting Requirements K-9134
Reproduction F-8565
Research Institutes G-10201
Research Methodologies F-5749
Research Programs K-9009 K-11659
Residential Areas C-10801
Respiration G-9039
  [See also: Plant Cell Respiration]
Respiratory Diseases F-2105 F-3211 F-3224 F-6842 F-7212 F-8396 K-9253 D-10204 F-10790 G-11452 F-11464
Respiratory Functions F-4204 F-7942 F-8533 F-10780
Respiratory System F-9958 F-10778
Respiratory Tract Models F-3048
Resuscitation F-10872
Retention (Physiological) F-3048 F-9727 D-10832
Riboflavin F-3704
Rotary Piston Engines B-2914 E-10888
Rubber Manufacturing B-0895
Russia F-2591 J-2953 D-2954 A-3205 F-10854 L-11414 F-11426 F-11437 F-11667
Samplers J-1257 D-10815 D-10818 D-10820 D-10822 D-10835 D-11664
  [See also: Automatic Samplers; Gas Samplers; Hi-Vol Samplers]
Sampling Methods D-2952 D-2954 G-6967 D-9038
  [See also: Gas Sampling; Particulate Sampling]
Scrubbers E-6835 E-8989 E-9607 B-11638
  [See also: Control Equipment]

SUBJECT INDEX

- Separators
  - [See: Centrifugal Separators; Cyclone Separators]
- Sewage Sludge B-11432
- Sewage Treatment B-10839
- Sheep G-11469
- Silicates F-11437
- Silicosis F-3211
- Slag B-11447
- Sludge
  - [See: Sewage Sludge]
- Sludge Plants B-10839
- Smokes J-1257 E-6835 E-6999L G-11452 F-11646
- Smoking F-8629 F-9019 F-10852
- Sodium Chloride Aerosols F-3848 F-11425
- Solar Radiation C-10937
- Solid Waste Disposal B-7206 B-9254 B-10867 B-11411 B-11412 B-11413 B-11427 B-11428 B-11429 B-11430 B-11431 B-11432 B-11435 B-11436 B-11438 B-11439 B-11440 B-11447 B-11448 B-11449 B-11450 B-11461 B-11636 B-11637 B-11640 B-11647 B-11649 B-11651 E-11652 B-11655 B-11657 E-11658 B-11666
- Soot H-3215 E-4862 L-10847 E-10936
- Spectrometry M-10908
- Spectrophotometry D-7700 D-7832 F-9019
- Spiders F-10916
- Spores J-11661 J-11662 D-11664
- Stack Gases E-2053 E-3046 E-3050 E-5137 B-9479 E-9607 B-11411 C-11420 B-11436 B-11438
- Stack Heights J-2953 C-3775 B-8976 L-10858 K-10865
- Stacks E-3050 J-10782 K-10796 C-10885 J-10897 C-11420
- Standards J-10897
  - [See also: Air Quality Standards; Emission Standards]
- Statistical Analyses F-7096 C-10885 L-11418 L-11419 F-11464
  - [See also: Health Statistics]
- Statistical Methods D-10204
- Steam Plants B-11411 B-11413 B-11435 B-11640 B-11655
  - [See also: Power Plants]
- Steel H-11461
- Streets J-6787 F-9014 J-9018 K-9229 K-9245 J-10550
- Stuttgart (Germany) D-10820
- Styrenes B-0905
- Sulfates D-4209 F-11416
  - [See also: Quinine Sulfate Method]
- Sulfhydril Compounds G-10844
- Sulfides F-10931
  - [See also: Hydrogen Sulfide]
- Sulfur Compounds B-10153
- Sulfur Dioxide E-1125 J-1257 E-2971 E-3046 M-3160 F-3239 C-3775 F-3848 F-4204 D-4209 M-5378 J-6192 J-6204 F-7212 F-7240 G-8462 F-8533 J-8628 J-8812 J-8991 F-8995 F-8996 F-9003 E-9006 J-9007 J-9008 J-9018 D-9037 D-9038 G-9039 K-9137 G-9757 G-10384 F-10791 K-10798 L-10847 F-10851 J-10863 D-10864 F-10868 J-10897 G-11415 L-11418 D-11423 F-11425 G-11453 M-11459 F-11656 F-11667
- Sulfur Dioxide Removal E-6678 E-6999L
- Sulfur Dioxide Removal (Combustion Products) E-2053 E-2971 E-3046 E-5137 E-9607 E-11460 K-11659
- Sulfuric Acid D-4209 E-4862 B-6282
- Sulfuric Acid Mist M-3160
- Sulfur Oxides B-6282 E-6999L
  - [See also: Oxides]
- Sulfur Trioxide D-8468
- Surface Coatings H-2140
- Suspended Particulates J-6192 A-11462
- Sweden E-6280 K-9009 B-10035 B-10153 L-10847 E-10936 J-11661
- Switzerland J-9010 B-11457
- Systems
  - [See: Alarm Systems]

- Tar E-10932
- Teeth G-11444
- Temperature E-4862 M-5628 B-11427
- Temperature (Atmospheric) C-11644
- Tetraethyl Lead F-10854 F-10856
- Tokyo F-3214 F-3239 J-6192
- Toxicity F-0093 F-2283 A-3205 F-6227 F-6628 G-6641 F-7821 F-7824 F-9606 A-10878 F-10889 G-11444
  - *[See also: Poisoning]*
- Toxic Tolerances K-2591 F-10778 F-10779 G-11415 F-11648
- Tracers
  - [See: Radioactive Tracers]
- Traffic Police F-9014
- Treatment and Aids F-2283 F-10883 F-11470
- Trees G-11417 G-11433
  - [See also: Birch Trees; Fir Trees]
- Tuberculosis F-2106 F-3211
- Tunnels E-3231
- Turbidimetry D-10824
- Turbine B-2914
- Turbulence C-10885
- Tyndallometer D-10819 D-10822

- United States B-11638
- Urban Areas B-8976 B-11448
- Urinalysis F-9535

Vapors
  [See: Organic Vapors]
Ventilation E-3231
  [See also: Pulmonary Ventilation]
Vietnam F-11643
Visibility E-3231

Waste Disposal
  [See: Solid Waste Disposal]
Weather Modification C-9460
Wet Cyclones A-10812
  [See also: Control Equipment]
Wind Circulation J-10550
Wright's Peak Flow Rate F-7999

X-Rays F-10884

Yeast Metabolism M-10919
Yugoslavia F-9253

Zinc H-8612 H-11461
Zoning
  [See: Planning and Zoning; Protective Zones]
Zurich J-8628 J-9010 J-9018